



## SV680-INT Series Servo Drive Parameter Guide



Industrial  
Automation



Intelligent  
Elevator



New Energy  
Vehicle



Industrial  
Robot



Rail  
Transit



Data code PS00015555A01

# Preface

## Introduction

The SV680-INT series servo drive is a high-end servo drive designed based on global-leading standards and high-end application needs. It is featured with high speed, high precision, high performance, and tuning-free function. Compliant with CE, UL, KC, EAC, UKCA and TUV certification requirements and top international quality standards, it is specially suitable for high-end applications.

Its power ranges from 0.05 kW to 7.5 kW. It supports Modbus, CANopen and EtherCAT communication protocols and carries necessary communication interfaces to work with the host controller for implementing a networked operation of multiple servo drives. The servo drive supports adaptive stiffness level setting, inertia auto-tuning, and vibration suppression for easy use. The drive, together with an MS1 series high-response servo motor (with ultra-low, low or medium inertia) equipped with a 23- or 26-bit single-turn/multi-turn absolute encoder, any third party servo motor, linear motor or DDR motor, serves to deliver a quiet and stable operation and accurate process control through features like fully closed-loop, internal process segment and gantry synchronization.

The drive also comes with features like safe torque off, dynamic braking, and brake output (external relay not needed) as standard and supports extension of seven kinds of functional safety and bus functional safety FSoE (the PINT version further offers 24V backup power) for continuous safe production. The drive aims to achieve quick and accurate position control, speed control, and torque control through high-performance solutions for automation equipment in such industries as electronic manufacturing, lithium batteries, manipulators, packaging, and machine tools.

This guide introduces the parameters of the drive, including a parameter list and description of parameters.

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## Note

The speed of a servo motor and DDR motor is in RPM and DDL motor is in mm/s. RPM is used throughout the manual. Unless otherwise specified, an RPM value is equivalent to the mm/s one.

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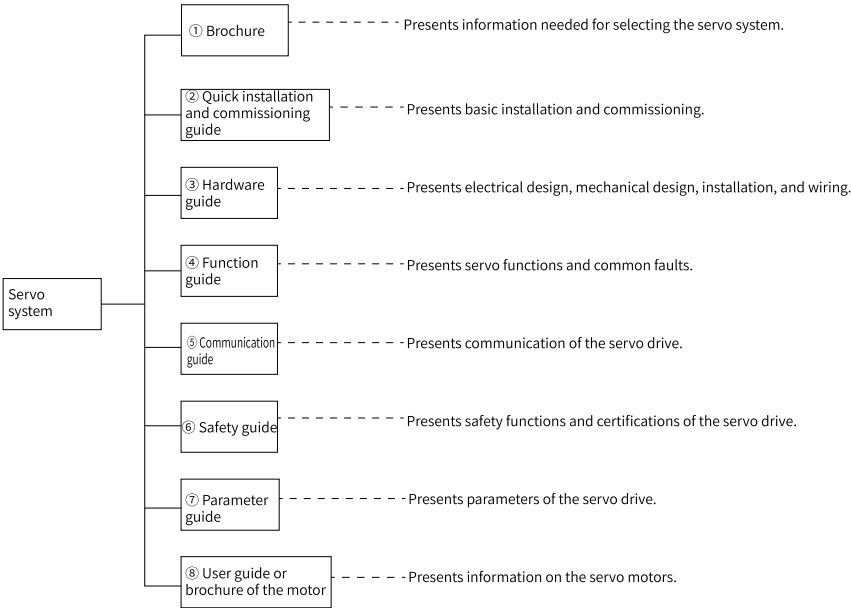
## Abbreviation

The following abbreviations will be used herein to refer to the corresponding servo drives.

| Abbreviation | Servo drive     |
|--------------|-----------------|
| [P]          | SV680P****_**** |
| [N]          | SV680N****_**** |

More documents

The documents related to the drive are shown in the following figure and table.



| No. | Name                                                                    | Data Code  | Description                                                                                                                                              |
|-----|-------------------------------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| ①   | SV680-INT series flagship servo drive                                   | 19120347   | Provides instructions on product selection, including the list of supporting components, technical data on the drive, and the selection guide of cables. |
| ②   | SV680-INT Series Servo Drive Installation and Commissioning Quick Guide | PS00015536 | Describes the model number, installation, terminals and quick commissioning and operation of the drive.                                                  |
| ③   | SV680-INT Series Servo Drive Hardware Guide                             | PS00015494 | Describes technical data, installation, terminals, required certificates and standards and solutions to common EMC problems of the drive.                |
| ④   | SV680-INT Series Servo Drive Function Guide                             | PS00015554 | Introduces the functions and faults of the drive, including function overview, adjustment, basic servo functions and fault handling.                     |
| ⑤   | SV680-INT Series Servo Drive Communication Guide                        | PS00015535 | Introduces the communication of the drive, including configuration of Modbus, CANopen, and EtherCAT communication.                                       |
| ⑥   | SV680P-INT Series Servo Drive Safety Guide                              | PS00009740 | Describes the safety function and related certifications and standards, wiring, commissioning process, troubleshooting and parameters of the drive.      |
|     | SV680N-INT Series Servo Drive Safety Guide                              | PS00009768 |                                                                                                                                                          |
| ⑦   | SV680-INT Series Servo Drive Parameter Guide                            | PS00015555 | Introduces the parameters of the drive, including a parameter list and description of parameters.                                                        |

| No. | Name                                         | Data Code  | Description                                                                                                                                                   |
|-----|----------------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ⑧   | MS1-R Series Servo Motor Selection Guide     | PS00004605 | Introduces the product information, general specifications, motor selection, cable selection, and required certificates and standards of the servo motor.     |
|     | MS1-R Series Servo Motor Installation Guide  | PS00005407 | Describes installation of the motor, including an installation flowchart, unpacking and transportation, mechanical installation, and electrical installation. |
|     | Direct drive motor module platform and drive | 19120011   | Introduces the product information, general specifications, motor selection, cable selection, and required standards of the motor.                            |

## Revision History

| Date    | Version | Description        |
|---------|---------|--------------------|
| 2024-05 | A01     | Minor corrections. |
| 2024-04 | A00     | First release.     |

## Access to the Guide

This guide is not delivered with the product. You can obtain the PDF version in the following way:

- Visit <http://www.inovance.com>, go to Support > Download, search by keyword, and then download the PDF file.
- Scan the QR code on the product with your mobile phone.
- Scan the QR code below to install the app, where you can search for and download manuals.



## Warranty

Inovance provides warranty service within the warranty period (as specified in your order) for any fault or damage that is not caused by improper operation of the user. You will be charged for any repair work after the warranty period expires.

Within the warranty period, maintenance fee will be charged for the following damage:

- Damage caused by operations not following the instructions in the user guide
- Damage caused by fire, flood, or abnormal voltage
- Damage caused by unintended use of the product

- Damage caused by use beyond the specified scope of application of the product
- Damage or secondary damage caused by force majeure (natural disaster, earthquake, and lightning strike)

The maintenance fee is charged according to the latest Price List of Inovance. If otherwise agreed upon, the terms and conditions in the agreement shall prevail.

For details, see the Product Warranty Card.

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# 1 Parameter List [P]

The mapping relation between the parameter displayed on the keypad (in decimal) and the object dictionary operated by the host controller (in hexadecimal, "Index" and "Sub-index") is as follows.

Object dictionary index = 0x2000 + Parameter group number

Object dictionary sub-index = Hexadecimal offset within the parameter group + 1  
For example:

| Panel Display | Object dictionary operated by the host controller |
|---------------|---------------------------------------------------|
| H02.15        | 2002.10h                                          |

## Note

The following section only describes the display and parameter settings on the keypad side (in decimal), which are different from those displayed in the software tool (in hexadecimal). Make necessary value conversions during use.

## 1.1 H00 Servo Motor Parameters

| Parameter | Communication Address | Name                   | Value                                                      | Default | Unit         | Change Mode  | Page                                      |
|-----------|-----------------------|------------------------|------------------------------------------------------------|---------|--------------|--------------|-------------------------------------------|
| H00.00    | 2000-01h              | Motor SN               | See " <a href="#">H00_en.00</a> " on page 121 for details. | 14102   | -            | At stop      | " <a href="#">H00_en.00</a> " on page 121 |
| H00.02    | 2000-03h              | Customized No.         | 0.00–4294967295.00                                         | 0.00    | -            | Unchangeable | " <a href="#">H00_en.02</a> " on page 122 |
| H00.04    | 2000-05h              | Encoder version        | 0.0–6553.5                                                 | 0.0     | -            | Unchangeable | " <a href="#">H00_en.04</a> " on page 122 |
| H00.05    | 2000-06h              | Serial-type motor code | 0–65535                                                    | 0       | -            | Unchangeable | " <a href="#">H00_en.05</a> " on page 122 |
| H00.06    | 2000-07h              | FPGA customized SN     | 0.00–655.35                                                | 0.00    | -            | Unchangeable | " <a href="#">H00_en.06</a> " on page 123 |
| H00.07    | 2000-08h              | STO version            | 0.0–6553.5                                                 | 0.0     | -            | Unchangeable | " <a href="#">H00_en.07</a> " on page 123 |
| H00.08    | 2000-09h              | Bus encoder type       | 0–65535                                                    | 0       | -            | At stop      | " <a href="#">H00_en.08</a> " on page 123 |
| H00.14    | 2000-0Fh              | Rated speed            | 50[mm/s]/[rpm]–10000[mm/s]/[rpm]                           | 3000    | [mm/s]/[rpm] | At stop      | " <a href="#">H00_en.14</a> " on page 124 |
| H00.15    | 2000-10h              | Maximum speed          | 50[mm/s]/[rpm]–10000[mm/s]/[rpm]                           | 6000    | [mm/s]/[rpm] | At stop      | " <a href="#">H00_en.15</a> " on page 124 |

| Parameter | Communication Address | Name                                  | Value                                                                                                                                          | Default | Unit                | Change Mode  | Page                       |
|-----------|-----------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------|--------------|----------------------------|
| H00.18    | 2000-13h              | Stator resistance                     | 0.001Ω to 65.535Ω                                                                                                                              | 0.500   | Ω                   | At stop      | "H00_en.18"<br>on page 124 |
| H00.19    | 2000-14h              | Stator inductance Lq                  | 0.01mH to 655.35mH                                                                                                                             | 3.27    | mH                  | At stop      | "H00_en.19"<br>on page 124 |
| H00.20    | 2000-15h              | Stator inductance Ld                  | 0.01mH to 655.35mH                                                                                                                             | 3.87    | mH                  | At stop      | "H00_en.20"<br>on page 125 |
| H00.22    | 2000-17h              | Torque coefficient Kt                 | 0.01[N/Arms]/[N·m/Arms]–655.35[N/Arms]/[N·m/Arms]                                                                                              | 0.51    | [N/Arms]/[N·m/Arms] | At stop      | "H00_en.22"<br>on page 125 |
| H00.40    | 2000-29h              | Motor control type                    | 0: General-purpose rotary motor (ROT)<br>1: Direct drive rotary motor (DDR)<br>2: Direct drive linear motor (DDL)<br>3: Voice coil motor (VOL) | 2       | -                   | Real-time    | "H00_en.40"<br>on page 125 |
| H00.41    | 2000-2Ah              | Master encoder configuration          | 0: CN2<br>1: CN7                                                                                                                               | 1       | -                   | Unchangeable | "H00_en.41"<br>on page 126 |
| H00.43    | 2000-2Ch              | BISSC/SSI/ENDAT data length           | 0–40                                                                                                                                           | 32      | -                   | At stop      | "H00_en.43"<br>on page 126 |
| H00.44    | 2000-2Dh              | Number of BiSS-C/SSI fault bits       | 0–31                                                                                                                                           | 2       | -                   | At stop      | "H00_en.44"<br>on page 126 |
| H00.45    | 2000-2Eh              | Encoder pitch 1                       | 0.01[mm]/[deg]–655.35[mm]/[deg]                                                                                                                | 2.00    | [mm]/[deg]          | At stop      | "H00_en.45"<br>on page 126 |
| H00.46    | 2000-2Fh              | Encoder pitch 2                       | 0.01[mm]/[deg]–655.35[mm]/[deg]                                                                                                                | 0.50    | [mm]/[deg]          | At stop      | "H00_en.46"<br>on page 127 |
| H00.47    | 2000-30h              | Encoder Type                          | 0: Optical scale<br>1: Magnetic scale                                                                                                          | 0       | -                   | At stop      | "H00_en.47"<br>on page 127 |
| H00.48    | 2000-31h              | Linear motor pole pitch (N-S)         | 0.00 mm–655.35 mm                                                                                                                              | 16.00   | mm                  | At stop      | "H00_en.48"<br>on page 127 |
| H00.49    | 2000-32h              | Direct drive motor encoder resolution | 0.000um/p–65.535um/p                                                                                                                           | 1.000   | um/p                | At stop      | "H00_en.49"<br>on page 128 |
| H00.54    | 2000-37h              | BISSC/SSI CRC                         | 0–1                                                                                                                                            | 1       | -                   | At stop      | "H00_en.54"<br>on page 128 |
| H00.55    | 2000-38h              | Rated torque                          | 0.00[N]/[N·m]–42949672.95[N]/[N·m]                                                                                                             | 2.00    | [N]/[N·m]           | At stop      | "H00_en.55"<br>on page 128 |
| H00.57    | 2000-3Ah              | Max. torque                           | 0.00[N]/[N·m]–42949672.95[N]/[N·m]                                                                                                             | 7.00    | [N]/[N·m]           | At stop      | "H00_en.57"<br>on page 128 |

| Parameter | Communication Address | Name                        | Value                                                                                 | Default | Unit                                | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------|---------------------------------------------------------------------------------------|---------|-------------------------------------|-------------|-----------------------------------------|
| H00.59    | 2000-3Ch              | Encoder counting direction  | 0: Forward<br>1: Reverse                                                              | 0       | -                                   | At stop     | <a href="#">"H00_en.59" on page 129</a> |
| H00.63    | 2000-40h              | Maximum motor current       | 0.00 A–65535.00 A                                                                     | 3.00    | A                                   | At stop     | <a href="#">"H00_en.63" on page 129</a> |
| H00.65    | 2000-42h              | Motor rated current         | 0.00 A–65535.00 A                                                                     | 1.00    | A                                   | At stop     | <a href="#">"H00_en.65" on page 129</a> |
| H00.67    | 2000-44h              | Moment of inertia           | 0.00000[g]/<br>[0.00001kgcm <sup>2</sup> ]-42949.67295[g]/[0.00001kgcm <sup>2</sup> ] | 0.00001 | [g]/<br>[0.00001kgcm <sup>2</sup> ] | At stop     | <a href="#">"H00_en.67" on page 130</a> |
| H00.69    | 2000-46h              | Linear back EMF coefficient | 0.00[V/(m/s)]/[100mV/rpm]-42949672.95[V/(m/s)]/[100mV/rpm]                            | 33.00   | [V/(m/s)]/[100mV/rpm]               | At stop     | <a href="#">"H00_en.69" on page 130</a> |

## 1.2 H01 Servo Drive Parameters

| Parameter | Communication Address | Name                   | Value      | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|------------------------|------------|---------|------|--------------|-----------------------------------------|
| H01.00    | 2001-01h              | MCU software version   | 0.0–6553.5 | 0.0     | -    | Unchangeable | <a href="#">"H01_en.00" on page 130</a> |
| H01.01    | 2001-02h              | FPGA software version  | 0.0–6553.5 | 0.0     | -    | Unchangeable | <a href="#">"H01_en.01" on page 130</a> |
| H01.02    | 2001-03h              | Servo drive series No. | 0–65535    | 0       | -    | Unchangeable | <a href="#">"H01_en.02" on page 131</a> |
| H01.06    | 2001-07h              | Board software version | 0.0–6553.5 | 0.0     | -    | Unchangeable | <a href="#">"H01_en.06" on page 131</a> |

| Parameter | Communication Address | Name                                     | Value                                                                                                                                                                                          | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|--------------|-----------------------------------------|
| H01.10    | 2001-0Bh              | Drive series No.                         | 2: S1R6<br>3: S2R8<br>5: S5R5<br>6: S7R6<br>7: S012<br>8: S018<br>9: S022<br>10: S027<br>10001: T3R5<br>10002: T5R4<br>10003: T8R4<br>10004: T012<br>10005: T017<br>10006: T021<br>10007: T026 | 3       | -    | At stop      | <a href="#">"H01_en.10" on page 131</a> |
| H01.11    | 2001-0Ch              | DC-AC voltage class                      | 0 V–65535 V                                                                                                                                                                                    | 220     | V    | Unchangeable | <a href="#">"H01_en.11" on page 132</a> |
| H01.12    | 2001-0Dh              | Drive rated power                        | 0.00 kW–42949672.95kW                                                                                                                                                                          | 0.40    | kW   | Unchangeable | <a href="#">"H01_en.12" on page 132</a> |
| H01.14    | 2001-0Fh              | Max. output power of the drive           | 0.00 kW–42949672.95kW                                                                                                                                                                          | 0.40    | kW   | Unchangeable | <a href="#">"H01_en.14" on page 133</a> |
| H01.16    | 2001-11h              | Rated output current of the drive        | 0.00 A–42949672.95 A                                                                                                                                                                           | 2.80    | A    | Unchangeable | <a href="#">"H01_en.16" on page 133</a> |
| H01.18    | 2001-13h              | Max. output current of the drive         | 0.00 A–42949672.95 A                                                                                                                                                                           | 10.10   | A    | Unchangeable | <a href="#">"H01_en.18" on page 133</a> |
| H01.40    | 2001-29h              | DC bus overvoltage protection threshold  | 0 V–2000 V                                                                                                                                                                                     | 420     | V    | Real-time    | <a href="#">"H01_en.40" on page 133</a> |
| H01.75    | 2001-4Ch              | Current loop amplification factor        | 0.00–655.35                                                                                                                                                                                    | 1.00    | -    | Real-time    | <a href="#">"H01_en.75" on page 134</a> |
| H01.88    | 2001-59h              | Junction temperature parameter version 1 | 0.0–6553.5                                                                                                                                                                                     | 0.0     | -    | Unchangeable | <a href="#">"H01_en.88" on page 134</a> |
| H01.89    | 2001-5Ah              | Junction temperature parameter version 2 | 0–65535                                                                                                                                                                                        | 0       | -    | Unchangeable | <a href="#">"H01_en.89" on page 134</a> |

### 1.3 H02 Basic Control Parameters

| Parameter | Communication Address | Name                         | Value                                                                                                                                                                                                                                                               | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H02.00    | 2002-01h              | Control mode                 | 0: Speed control mode<br>1: Position control mode<br>2: Torque control mode<br>3: Torque/Speed control mode<br>4: Speed/Position control mode<br>5: Torque/Position control mode<br>6: Torque/Speed/Position compound mode<br>7: Process segment<br>8: CANopen mode | 1       | -    | At stop     | <a href="#">"H02_en.00" on page 135</a> |
| H02.01    | 2002-02h              | Absolute system selection    | 0: Incremental mode<br>1: Absolute position linear mode<br>2: Absolute position rotation mode<br>3: Absolute position linear mode (without encoder overflow warning)<br>4: Absolute position single-turn mode                                                       | 0       | -    | At stop     | <a href="#">"H02_en.01" on page 135</a> |
| H02.02    | 2002-03h              | Rotation direction selection | 0: Counterclockwise (CCW) as forward direction<br>1: Clockwise (CW) as forward direction                                                                                                                                                                            | 0       | -    | At stop     | <a href="#">"H02_en.02" on page 136</a> |
| H02.03    | 2002-04h              | Output pulse phase           | 0: Phase A leads phase B<br>1: Phase A lags behind phase B                                                                                                                                                                                                          | 0       | -    | At stop     | <a href="#">"H02_en.03" on page 136</a> |

| Parameter | Communication Address | Name                    | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Default | Unit | Change Mode | Page                                     |
|-----------|-----------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|------------------------------------------|
| H02.05    | 2002-06h              | Stop mode at S-ON OFF   | -4: Stop based on ramp 2, keeping dynamic braking state<br>-3: Stop at zero speed, keeping dynamic braking state<br>-2: Stop based on ramp 1, keeping dynamic braking state<br>-1: Dynamic braking stop, keeping dynamic braking state<br>0: Coast to stop, keeping de-energized state<br>1: Stop based on ramp 1, keeping de-energized state<br>2: Dynamic braking stop, keeping de-energized state                                                                                                                                                                                            | 0       | -    | Real-time   | <a href="#">" H02_en.05" on page 137</a> |
| H02.06    | 2002-07h              | Stop mode at No.2 fault | -5: Stop at zero speed, keeping dynamic braking state<br>-4: Stop at emergency stop torque, keeping dynamic braking state<br>-3: Stop based on ramp 2, keeping dynamic braking state<br>-2: Stop based on ramp 1, keeping dynamic braking state<br>-1: Dynamic braking stop, keeping dynamic braking state<br>0: Coast to stop, keeping de-energized state<br>1: Stop based on ramp 1, keeping de-energized state<br>2: Stop based on ramp 2, keeping de-energized state<br>3: Stop at emergency stop torque, keeping de-energized state<br>4: Dynamic braking stop, keeping de-energized state | 2       | -    | Real-time   | <a href="#">" H02_en.06" on page 137</a> |

| Parameter | Communication Address | Name                                                        | Value                                                                                                                                                                                                                                                                                                                                                                                                                      | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H02.07    | 2002-08h              | Stop mode at overtravel                                     | 0: Coast to stop, keeping de-energized state<br>1: Stop at zero speed, keeping position lock state<br>2: Stop at zero speed, keeping de-energized state<br>3: Stop based on ramp 2, keeping de-energized state<br>4: Stop based on ramp 2, keeping position lock state<br>5: Dynamic braking stop, keeping de-energized state<br>6: Dynamic braking stop, keeping dynamic braking state<br>7: Not responding to overtravel | 1       | -            | At stop     | <a href="#">"H02_en.07" on page 138</a> |
| H02.08    | 2002-09h              | Stop mode at No.1 fault                                     | 0: Coast to stop, keeping de-energized state<br>1: Dynamic braking stop, keeping de-energized state<br>2: Dynamic braking stop, keeping dynamic braking state                                                                                                                                                                                                                                                              | 2       | -            | At stop     | <a href="#">"H02_en.08" on page 139</a> |
| H02.09    | 2002-0Ah              | Delay from brake output ON to command received              | 0 ms to 500 ms                                                                                                                                                                                                                                                                                                                                                                                                             | 250     | ms           | Real-time   | <a href="#">"H02_en.09" on page 139</a> |
| H02.10    | 2002-0Bh              | Delay from brake output OFF to motor de-energized           | 50 ms to 1000 ms                                                                                                                                                                                                                                                                                                                                                                                                           | 150     | ms           | Real-time   | <a href="#">"H02_en.10" on page 139</a> |
| H02.11    | 2002-0Ch              | Motor speed threshold at brake output OFF in rotation state | 20[mm/s]/[rpm]–3000[mm/s]/[rpm]                                                                                                                                                                                                                                                                                                                                                                                            | 30      | [mm/s]/[rpm] | Real-time   | <a href="#">"H02_en.11" on page 140</a> |
| H02.12    | 2002-0Dh              | Delay from S-ON OFF to brake output OFF in rotation state   | 1 ms to 65535 ms                                                                                                                                                                                                                                                                                                                                                                                                           | 500     | ms           | Real-time   | <a href="#">"H02_en.12" on page 140</a> |
| H02.15    | 2002-10h              | LED warning display                                         | 0: Output warning information immediately<br>1: Not output warning information                                                                                                                                                                                                                                                                                                                                             | 0       | -            | Real-time   | <a href="#">"H02_en.15" on page 140</a> |



| Parameter | Communication Address | Name                                                    | Value                                                                                                                                                                                                                                                                                                                                                                               | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|--------------|-----------------------------------------|
| H02.16    | 2002-11h              | Brake enable switch                                     | 0: OFF<br>1: ON                                                                                                                                                                                                                                                                                                                                                                     | 0       | -    | Real-time    | <a href="#">"H02_en.16" on page 140</a> |
| H02.17    | 2002-12h              | Stop mode upon main circuit power failure               | 0: Keep current action<br>1: Stop upon fault as defined by H02.06<br>2: Stop at S-ON OFF as defined by H02.05<br>3: Stop quickly as defined by H02.18                                                                                                                                                                                                                               | 2       | -    | Real-time    | <a href="#">"H02_en.17" on page 141</a> |
| H02.18    | 2002-13h              | Quick stop mode                                         | 0: Coast to stop, keeping de-energized state<br>1: Stop by ramp 1, keeping de-energized state<br>2: Stop by ramp 2, keeping de-energized state<br>3: Stop at emergency stop torque, keeping de-energized state<br>5: Stop by ramp 1, keeping position lock state<br>6: Stop by ramp 2, keeping position lock state<br>7: Stop at emergency stop torque, keeping position lock state | 2       | -    | Real-time    | <a href="#">"H02_en.18" on page 141</a> |
| H02.21    | 2002-16h              | Permissible minimum resistance of regenerative resistor | 1Ω to 1000Ω                                                                                                                                                                                                                                                                                                                                                                         | 40      | Ω    | Unchangeable | <a href="#">"H02_en.21" on page 142</a> |
| H02.22    | 2002-17h              | Power of built-in regenerative resistor                 | 0 W–65535W                                                                                                                                                                                                                                                                                                                                                                          | 50      | W    | Unchangeable | <a href="#">"H02_en.22" on page 142</a> |
| H02.23    | 2002-18h              | Resistance of built-in regenerative resistor            | 0Ω to 65535Ω                                                                                                                                                                                                                                                                                                                                                                        | 50      | Ω    | Unchangeable | <a href="#">"H02_en.23" on page 142</a> |
| H02.24    | 2002-19h              | Resistor heat dissipation coefficient                   | 10% to 100%                                                                                                                                                                                                                                                                                                                                                                         | 30      | %    | Real-time    | <a href="#">"H02_en.24" on page 143</a> |
| H02.25    | 2002-1Ah              | Regenerative resistor type                              | 0: Built-in<br>1: External, natural cooling<br>2: External, forced air cooling<br>3: No resistor needed                                                                                                                                                                                                                                                                             | 3       | -    | Real-time    | <a href="#">"H02_en.25" on page 143</a> |

| Parameter | Communication Address | Name                                              | Value                                                                                                                                                                                         | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H02.26    | 2002-1Bh              | Power of external regenerative resistor           | 1 W–65535W                                                                                                                                                                                    | 40      | W    | Real-time   | <a href="#">"H02_en.26" on page 144</a> |
| H02.27    | 2002-1Ch              | Resistance of external regenerative resistor      | 15Ω to 1000Ω                                                                                                                                                                                  | 50      | Ω    | Real-time   | <a href="#">"H02_en.27" on page 144</a> |
| H02.28    | 2002-1Dh              | Parameters Initialization                         | 0: Parameters in group H02 and above initialized<br>1: Parameters in group H00, H02 and above initialized<br>2: All parameters initialized (default values used for model-related parameters) | 0       | -    | At stop     | <a href="#">"H02_en.28" on page 144</a> |
| H02.30    | 2002-1Fh              | User password                                     | 0–65535                                                                                                                                                                                       | 0       | -    | Real-time   | <a href="#">"H02_en.30" on page 145</a> |
| H02.31    | 2002-20h              | System parameter initialization                   | 0: No operation<br>1: Restore default settings<br>2: Clear fault records                                                                                                                      | 0       | -    | At stop     | <a href="#">"H02_en.31" on page 145</a> |
| H02.32    | 2002-21h              | Selection of parameters in group H0b              | 0–99                                                                                                                                                                                          | 50      | -    | Real-time   | <a href="#">"H02_en.32" on page 145</a> |
| H02.35    | 2002-24h              | Keypad data update frequency                      | 0 Hz–20 Hz                                                                                                                                                                                    | 0       | Hz   | Real-time   | <a href="#">"H02_en.35" on page 146</a> |
| H02.41    | 2002-2Ah              | Manufacturer password                             | 0–65535                                                                                                                                                                                       | 0       | -    | Real-time   | <a href="#">"H02_en.41" on page 146</a> |
| H02.47    | 2002-30h              | Delay time from power cable breakage to brake OFF | 0 ms to 1000 ms                                                                                                                                                                               | 10      | ms   | Real-time   | <a href="#">"H02_en.47" on page 146</a> |

## 1.4 H03 Terminal Input Parameters

| Parameter | Communication Address | Name                                               | Value                                                      | Default | Unit | Change Mode | Page                                      |
|-----------|-----------------------|----------------------------------------------------|------------------------------------------------------------|---------|------|-------------|-------------------------------------------|
| H03.00    | 2003-01h              | DI function allocation 1 (activated upon power-on) | See " <a href="#">H03_en.00</a> " on page 147 for details. | 0       | -    | Real-time   | " <a href="#">H03_en.00</a> " on page 147 |
| H03.01    | 2003-02h              | DI function allocation 2 (activated upon power-on) | See " <a href="#">H03_en.01</a> " on page 147 for details. | 0       | -    | Real-time   | " <a href="#">H03_en.01</a> " on page 147 |
| H03.02    | 2003-03h              | DI1 function                                       | See " <a href="#">H03_en.02</a> " on page 148 for details. | 14      | -    | Real-time   | " <a href="#">H03_en.02</a> " on page 148 |
| H03.03    | 2003-04h              | DI1 logic selection                                | 0: Normally open<br>1: Closed                              | 0       | -    | Real-time   | " <a href="#">H03_en.03</a> " on page 150 |
| H03.04    | 2003-05h              | DI2 function                                       | See H03.02.                                                | 15      | -    | Real-time   | " <a href="#">H03_en.04</a> " on page 150 |
| H03.05    | 2003-06h              | DI2 logic selection                                | 0: Normally open<br>1: Closed                              | 0       | -    | Real-time   | " <a href="#">H03_en.05</a> " on page 150 |
| H03.06    | 2003-07h              | DI3 function                                       | See H03.02.                                                | 13      | -    | Real-time   | " <a href="#">H03_en.06</a> " on page 151 |
| H03.07    | 2003-08h              | DI3 logic selection                                | 0: Normally open<br>1: Closed                              | 0       | -    | Real-time   | " <a href="#">H03_en.07</a> " on page 151 |
| H03.08    | 2003-09h              | DI4 function                                       | See H03.02.                                                | 2       | -    | Real-time   | " <a href="#">H03_en.08</a> " on page 151 |
| H03.09    | 2003-0Ah              | DI4 logic selection                                | 0: Normally open<br>1: Closed                              | 0       | -    | Real-time   | " <a href="#">H03_en.09</a> " on page 152 |
| H03.10    | 2003-0Bh              | DI5 function                                       | See H03.02.                                                | 1       | -    | Real-time   | " <a href="#">H03_en.10</a> " on page 152 |
| H03.11    | 2003-0Ch              | DI5 logic selection                                | 0: Normally open<br>1: Closed                              | 0       | -    | Real-time   | " <a href="#">H03_en.11</a> " on page 152 |
| H03.12    | 2003-0Dh              | DI6 function                                       | See H03.02.                                                | 0       | -    | Real-time   | " <a href="#">H03_en.12</a> " on page 152 |
| H03.13    | 2003-0Eh              | DI6 logic selection                                | 0: Normally open<br>1: Closed                              | 0       | -    | Real-time   | " <a href="#">H03_en.13</a> " on page 153 |
| H03.14    | 2003-0Fh              | DI7 function                                       | See H03.02.                                                | 45      | -    | Real-time   | " <a href="#">H03_en.14</a> " on page 153 |
| H03.15    | 2003-10h              | DI7 logic selection                                | 0: Normally open<br>1: Closed                              | 0       | -    | Real-time   | " <a href="#">H03_en.15</a> " on page 153 |
| H03.16    | 2003-11h              | DI8 function                                       | See H03.02.                                                | 31      | -    | Real-time   | " <a href="#">H03_en.16</a> " on page 153 |
| H03.17    | 2003-12h              | DI8 logic selection                                | 0: Normally open<br>1: Closed                              | 0       | -    | Real-time   | " <a href="#">H03_en.17</a> " on page 154 |

| Parameter | Communication Address | Name                                               | Value                                                      | Default | Unit | Change Mode | Page                                      |
|-----------|-----------------------|----------------------------------------------------|------------------------------------------------------------|---------|------|-------------|-------------------------------------------|
| H03.34    | 2003-23h              | DI function allocation 3 (activated upon power-on) | See " <a href="#">H03_en.34</a> " on page 154 for details. | 0       | -    | Real-time   | " <a href="#">H03_en.34</a> " on page 154 |
| H03.35    | 2003-24h              | DI function allocation 4 (activated upon power-on) | See " <a href="#">H03_en.35</a> " on page 155 for details. | 0       | -    | Real-time   | " <a href="#">H03_en.35</a> " on page 155 |
| H03.50    | 2003-33h              | Voltage-type AI1 offset                            | -5000 mV–5000 mV                                           | 0       | mV   | Real-time   | " <a href="#">H03_en.50</a> " on page 156 |
| H03.51    | 2003-34h              | Voltage-type AI1 input filter time constant        | 0.00 ms to 655.35 ms                                       | 2.00    | ms   | Real-time   | " <a href="#">H03_en.51</a> " on page 156 |
| H03.53    | 2003-36h              | Voltage-type AI1 dead zone                         | 0.0 mV–1000.0 mV                                           | 10.0    | mV   | Real-time   | " <a href="#">H03_en.53</a> " on page 157 |
| H03.54    | 2003-37h              | Voltage-type AI1 zero drift                        | -500.0 mV–500.0 mV                                         | 0.0     | mV   | Real-time   | " <a href="#">H03_en.54</a> " on page 157 |
| H03.55    | 2003-38h              | Voltage-type AI2 offset                            | -5000 mV–5000 mV                                           | 0       | mV   | Real-time   | " <a href="#">H03_en.55</a> " on page 157 |
| H03.56    | 2003-39h              | Voltage-type AI2 input filter time constant        | 0.00 ms to 655.35 ms                                       | 2.00    | ms   | Real-time   | " <a href="#">H03_en.56</a> " on page 158 |
| H03.58    | 2003-3Bh              | Voltage-type AI2 dead zone                         | 0.0 mV–1000.0 mV                                           | 10.0    | mV   | Real-time   | " <a href="#">H03_en.58</a> " on page 158 |
| H03.59    | 2003-3Ch              | Voltage-type AI2 zero drift                        | -500.0 mV–500.0 mV                                         | 0.0     | mV   | Real-time   | " <a href="#">H03_en.59</a> " on page 158 |
| H03.60    | 2003-3Dh              | DI1 fitter time                                    | 0.00 ms to 500.00 ms                                       | 3.00    | ms   | Real-time   | " <a href="#">H03_en.60</a> " on page 159 |
| H03.61    | 2003-3Eh              | DI2 fitter time                                    | 0.00 ms to 500.00 ms                                       | 3.00    | ms   | Real-time   | " <a href="#">H03_en.61</a> " on page 159 |
| H03.62    | 2003-3Fh              | DI3 fitter time                                    | 0.00 ms to 500.00 ms                                       | 3.00    | ms   | Real-time   | " <a href="#">H03_en.62</a> " on page 159 |
| H03.63    | 2003-40h              | DI4 fitter time                                    | 0.00 ms to 500.00 ms                                       | 3.00    | ms   | Real-time   | " <a href="#">H03_en.63</a> " on page 159 |
| H03.64    | 2003-41h              | DI5 fitter time                                    | 0.00 ms to 500.00 ms                                       | 3.00    | ms   | Real-time   | " <a href="#">H03_en.64</a> " on page 160 |
| H03.65    | 2003-42h              | DI6 fitter time                                    | 0.00 ms to 500.00 ms                                       | 3.00    | ms   | Real-time   | " <a href="#">H03_en.65</a> " on page 160 |
| H03.66    | 2003-43h              | DI7 fitter time                                    | 0.00 ms to 500.00 ms                                       | 0.00    | ms   | Real-time   | " <a href="#">H03_en.66</a> " on page 160 |
| H03.67    | 2003-44h              | DI8 fitter time                                    | 0.00 ms to 500.00 ms                                       | 3.00    | ms   | Real-time   | " <a href="#">H03_en.67</a> " on page 161 |

| Parameter | Communication Address | Name                                | Value                           | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------|---------------------------------|---------|--------------|-------------|-----------------------------------------|
| H03.80    | 2003-51h              | Speed corresponding to analog 10 V  | 0[mm/s]/[rpm]–10000[mm/s]/[rpm] | 3000    | [mm/s]/[rpm] | At stop     | <a href="#">"H03_en.80" on page 161</a> |
| H03.81    | 2003-52h              | Torque corresponding to analog 10 V | 0.00 to 8.00                    | 1.00    | Multiplier   | At stop     | <a href="#">"H03_en.81" on page 161</a> |

## 1.5 H04 Terminal Output Parameters

| Parameter | Communication Address | Name                | Value                                                    | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|---------------------|----------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H04.00    | 2004-01h              | DO1 function        | See <a href="#">"H04_en.00" on page 162</a> for details. | 1       | -    | Real-time   | <a href="#">"H04_en.00" on page 162</a> |
| H04.01    | 2004-02h              | DO1 logic selection | 0: Normally open<br>1: Closed                            | 0       | -    | Real-time   | <a href="#">"H04_en.01" on page 163</a> |
| H04.02    | 2004-03h              | DO2 function        | See H04.00.                                              | 5       | -    | Real-time   | <a href="#">"H04_en.02" on page 163</a> |
| H04.03    | 2004-04h              | DO2 logic selection | 0: Normally open<br>1: Closed                            | 0       | -    | Real-time   | <a href="#">"H04_en.03" on page 163</a> |
| H04.04    | 2004-05h              | DO3 function        | See H04.00.                                              | 0       | -    | Real-time   | <a href="#">"H04_en.04" on page 163</a> |
| H04.05    | 2004-06h              | DO3 logic selection | 0: Normally open<br>1: Closed                            | 0       | -    | Real-time   | <a href="#">"H04_en.05" on page 164</a> |
| H04.06    | 2004-07h              | DO4 function        | See H04.00.                                              | 11      | -    | Real-time   | <a href="#">"H04_en.06" on page 164</a> |
| H04.07    | 2004-08h              | DO4 logic selection | 0: Normally open<br>1: Closed                            | 0       | -    | Real-time   | <a href="#">"H04_en.07" on page 164</a> |
| H04.08    | 2004-09h              | DO5 function        | See H04.00.                                              | 16      | -    | Real-time   | <a href="#">"H04_en.08" on page 164</a> |
| H04.09    | 2004-0Ah              | DO5 logic selection | 0: Normally open<br>1: Closed                            | 0       | -    | Real-time   | <a href="#">"H04_en.09" on page 165</a> |

| Parameter | Communication Address | Name                                           | Value                                                                                                                                                                                                                                                                                                    | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H04.22    | 2004-17h              | DO source selection                            | bit0: DO1<br>0: DO1 function output<br>1: bit0 of H31.04<br>bit1: DO2<br>0: DO2 function output<br>1: bit1 of H31.04<br>bit2: DO3<br>0: DO3 function output<br>1: bit2 of H31.04<br>bit3: DO4<br>0: DO4 function output<br>1: bit3 of H31.04<br>bit4: DO5<br>0: DO5 function output<br>1: bit4 of H31.04 | 0       | -    | Real-time   | <a href="#">"H04_en.22" on page 165</a> |
| H04.23    | 2004-18h              | Communication-forced DO logic in non-OP status | bit0: DO1<br>0: Status unchanged<br>1: No output<br>bit1: DO2<br>0: Status unchanged<br>1: No output<br>bit2: DO3<br>0: Status unchanged<br>1: No output<br>bit3: DO4<br>0: Status unchanged<br>1: No output<br>bit4: DO5<br>0: Status unchanged<br>1: No output                                         | 0       | -    | Real-time   | <a href="#">"H04_en.23" on page 166</a> |
| H04.24    | 2004-19h              | DO brake enable                                | 0: Disabled<br>1: Enable                                                                                                                                                                                                                                                                                 | 0       | -    | At stop     | <a href="#">"H04_en.24" on page 167</a> |

| Parameter | Communication Address | Name                 | Value                                                                                                                                                                                                                                                                                                                                                                                    | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H04.50    | 2004-33h              | AO1 signal selection | 0: Motor speed (1 V/1000 [mm/s]/[rpm])<br>1: Speed reference (1 V/1000 [mm/s]/[rpm])<br>2: Torque reference (1 V/100 x rated torque)<br>3: Position deviation (0.5 mV/1 reference unit)<br>4: Position deviation (0.5 mV/1 encoder unit)<br>5: Position reference speed (1 V/1000 [mm/s]/[rpm])<br>6: Positioning completed<br>8: AI1 voltage<br>9: AI2 voltage<br>10: Defined by H31.05 | 0       | -    | Real-time   | <a href="#">"H04_en.50" on page 167</a> |
| H04.51    | 2004-34h              | AO1 offset voltage   | -10000 mV–10000 mV                                                                                                                                                                                                                                                                                                                                                                       | 0       | mV   | Real-time   | <a href="#">"H04_en.51" on page 168</a> |
| H04.52    | 2004-35h              | AO1 ratio            | -99.99–99.99                                                                                                                                                                                                                                                                                                                                                                             | 1.00    | -    | Real-time   | <a href="#">"H04_en.52" on page 168</a> |

## 1.6 H05 Position Control Parameters

| Parameter | Communication Address | Name                                      | Value                                                                  | Default | Unit           | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------|------------------------------------------------------------------------|---------|----------------|-------------|-----------------------------------------|
| H05.00    | 2005-01h              | Primary position reference source         | 0: Pulse reference<br>1: Step reference<br>2: Multi-position reference | 0       | -              | Real-time   | <a href="#">"H05_en.00" on page 169</a> |
| H05.01    | 2005-02h              | Position pulse reference input terminal   | 0: Low speed<br>1: High speed                                          | 0       | -              | At stop     | <a href="#">"H05_en.01" on page 169</a> |
| H05.02    | 2005-03h              | Pulses per revolution                     | 0–4294967295                                                           | 0       | [P/N-]/[P/Rev] | At stop     | <a href="#">"H05_en.02" on page 169</a> |
| H05.04    | 2005-05h              | First-order low-pass filter time constant | 0.0 ms–6553.5 ms                                                       | 0.0     | ms             | At stop     | <a href="#">"H05_en.04" on page 170</a> |
| H05.05    | 2005-06h              | Step amount                               | -9999 to +9999                                                         | 50      | Reference unit | At stop     | <a href="#">"H05_en.05" on page 170</a> |
| H05.06    | 2005-07h              | Moving average filter time constant 1     | 0.0 ms–128.0 ms                                                        | 0.0     | ms             | At stop     | <a href="#">"H05_en.06" on page 170</a> |

| Parameter | Communication Address | Name                                              | Value                                                                                                                                                                                       | Default  | Unit              | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|-------------------|-------------|-----------------------------------------|
| H05.07    | 2005-08h              | Electronic gear ratio 1 (numerator)               | 1–1073741824                                                                                                                                                                                | 67108864 | -                 | Real-time   | <a href="#">"H05_en.07" on page 171</a> |
| H05.09    | 2005-0Ah              | Electronic gear ratio 1 (denominator)             | 1–1073741824                                                                                                                                                                                | 10000    | -                 | Real-time   | <a href="#">"H05_en.09" on page 171</a> |
| H05.11    | 2005-0Ch              | Electronic gear ratio 2 (numerator)               | 1–1073741824                                                                                                                                                                                | 67108864 | -                 | Real-time   | <a href="#">"H05_en.11" on page 172</a> |
| H05.13    | 2005-0Eh              | Electronic gear ratio 2 (denominator)             | 1–1073741824                                                                                                                                                                                | 10000    | -                 | Real-time   | <a href="#">"H05_en.13" on page 172</a> |
| H05.15    | 2005-10h              | Pulse reference form                              | 0: Direction + Pulse, positive logic<br>1: Direction + Pulse, negative logic<br>2: Phase A + phase B quadrature pulse, quadrupled frequency<br>3: CW + CCW                                  | 0        | -                 | At stop     | <a href="#">"H05_en.15" on page 172</a> |
| H05.16    | 2005-11h              | Clear action                                      | 0: Position deviation cleared upon S-OFF or fault<br>1: Position deviation cleared upon S-OFF or fault<br>2: Position deviation cleared upon non-operational state or active DI function 35 | 0        | -                 | At stop     | <a href="#">"H05_en.16" on page 174</a> |
| H05.17    | 2005-12h              | Number of encoder frequency-division pulses       | 0–4194303                                                                                                                                                                                   | 2500     | [P/N- N]/[P/ Rev] | At stop     | <a href="#">"H05_en.17" on page 174</a> |
| H05.19    | 2005-14h              | Speed feedforward control                         | 0: No speed feedforward<br>1: Internal speed feedforward<br>2: H05.72<br>3: Zero phase                                                                                                      | 1        | -                 | At stop     | <a href="#">"H05_en.19" on page 175</a> |
| H05.20    | 2005-15h              | Condition for positioning completed signal output | See <a href="#">"H05_en.20" on page 175</a> for details.                                                                                                                                    | 0        | -                 | Real-time   | <a href="#">"H05_en.20" on page 175</a> |
| H05.21    | 2005-16h              | Threshold of positioning completed                | 1 to 65535                                                                                                                                                                                  | 46976    | Encoder unit      | Real-time   | <a href="#">"H05_en.21" on page 177</a> |
| H05.22    | 2005-17h              | Proximity threshold                               | 1 to 65535                                                                                                                                                                                  | 65535    | Encoder unit      | Real-time   | <a href="#">"H05_en.22" on page 177</a> |



| Parameter | Communication Address | Name                                              | Value                                                                                                                                                                                                                                                                                                                                         | Default | Unit           | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------|-------------|-----------------------------------------|
| H05.24    | 2005-19h              | Interrupt positioning displacement                | -1073741824 to 1073741824                                                                                                                                                                                                                                                                                                                     | 10000   | Reference unit | Real-time   | <a href="#">"H05_en.24" on page 178</a> |
| H05.26    | 2005-1Bh              | Constant operating speed in interrupt positioning | 0[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                                                                                                                                                                                                                                                               | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H05_en.26" on page 178</a> |
| H05.27    | 2005-1Ch              | Acc./Dec. time of interrupt positioning           | 0 ms–65535 ms                                                                                                                                                                                                                                                                                                                                 | 10      | ms             | Real-time   | <a href="#">"H05_en.27" on page 178</a> |
| H05.29    | 2005-1Eh              | Interruption fixed length unlock                  | 0: Disabled<br>1: Enabled                                                                                                                                                                                                                                                                                                                     | 1       | -              | Real-time   | <a href="#">"H05_en.29" on page 179</a> |
| H05.30    | 2005-1Fh              | Homing enable selection                           | 0: Disabled<br>1: Homing enabled through the HomingStart signal input from DI<br>2: Electrical homing enabled through the HomingStart signal input from DI<br>3: Homing started immediately upon power-on<br>4: Homing executed immediately<br>5: Electrical homing started<br>6: Current position as home<br>8: D-triggered position as home | 0       | -              | Real-time   | <a href="#">"H05_en.30" on page 179</a> |
| H05.31    | 2005-20h              | Homing mode                                       | See <a href="#">"H05_en.31" on page 179</a> for details.                                                                                                                                                                                                                                                                                      | 0       | -              | Real-time   | <a href="#">"H05_en.31" on page 179</a> |
| H05.32    | 2005-21h              | Speed of high-speed search for home switch signal | 0[mm/s]/[rpm]–3000[mm/s]/[rpm]                                                                                                                                                                                                                                                                                                                | 100     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H05_en.32" on page 180</a> |
| H05.33    | 2005-22h              | Speed of low-speed search for home switch signal  | 0[mm/s]/[rpm]–1000[mm/s]/[rpm]                                                                                                                                                                                                                                                                                                                | 10      | [mm/s]/[rpm]   | Real-time   | <a href="#">"H05_en.33" on page 180</a> |
| H05.34    | 2005-23h              | Acceleration/Deceleration time during homing      | 0 ms–1000 ms                                                                                                                                                                                                                                                                                                                                  | 1000    | ms             | Real-time   | <a href="#">"H05_en.34" on page 181</a> |
| H05.35    | 2005-24h              | Home search time limit                            | 0 ms–65535 ms                                                                                                                                                                                                                                                                                                                                 | 10000   | ms             | Real-time   | <a href="#">"H05_en.35" on page 181</a> |

| Parameter | Communication Address | Name                                              | Value                                                                                                                                                                                                                                                                                                                                                                                                              | Default | Unit           | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------|-------------|-----------------------------------------|
| H05.36    | 2005-25h              | Mechanical home offset                            | -2147483648 to 2147483647                                                                                                                                                                                                                                                                                                                                                                                          | 0       | Reference unit | Real-time   | <a href="#">"H05_en.36" on page 181</a> |
| H05.38    | 2005-27h              | Frequency-division output source                  | 0: Encoder frequency-division output<br>1: Pulse reference synchronous output<br>2: Frequency-division output inhibited<br>3: Second encoder frequency-division output<br>4: H31-01 reference frequency output                                                                                                                                                                                                     | 0       | -              | Real-time   | <a href="#">"H05_en.38" on page 182</a> |
| H05.39    | 2005-28h              | Electronic gear ratio switchover condition        | 0: Switchover after position reference is kept 0 for 2.5 ms<br>1: Switched in real time                                                                                                                                                                                                                                                                                                                            | 0       | -              | At stop     | <a href="#">"H05_en.39" on page 182</a> |
| H05.40    | 2005-29h              | Mechanical home offset and action upon overtravel | 0: H05.36 as the coordinate after homing, reverse homing applied after homing triggered again on overtravel<br>1: H05.36 as the relative offset after homing, reverse homing applied after homing triggered again on overtravel<br>2: H05.36 as the coordinate after homing, reverse homing auto-applied on overtravel<br>3: H05.36 as the relative offset after homing, reverse homing auto-applied on overtravel | 0       | -              | Real-time   | <a href="#">"H05_en.40" on page 183</a> |
| H05.41    | 2005-2Ah              | Z pulse output polarity                           | bit0: Frequency-division Z output polarity<br>0: Positive (high level upon active Z pulse)<br>1: Negative (low level upon active Z pulse)<br>bit1: OCZ output polarity<br>0: Positive (high level upon active Z pulse)<br>1: Negative (low level upon active Z pulse)<br>bit2: Inner loop probe Z signal source<br>0: Motor Z signal<br>1: Frequency-division output Z signal                                      | 1       | -              | At stop     | <a href="#">"H05_en.41" on page 183</a> |

| Parameter | Communication Address | Name                                                                               | Value                                                                                           | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H05.43    | 2005-2Ch              | Position pulse edge                                                                | 0: Rising edge-triggered<br>1: Falling edge-triggered                                           | 0       | -            | Real-time   | <a href="#">"H05_en.43" on page 185</a> |
| H05.44    | 2005-2Dh              | Numerator of frequency-division output reduction ratio                             | 1–16383                                                                                         | 1       | -            | At stop     | <a href="#">"H05_en.44" on page 186</a> |
| H05.45    | 2005-2Eh              | Denominator of frequency-division output reduction ratio                           | 1–8191                                                                                          | 1       | -            | At stop     | <a href="#">"H05_en.45" on page 186</a> |
| H05.46    | 2005-2Fh              | DI selection of multi-turn frequency-division Z starting point                     | 0: No selection<br>1: DI1<br>2: DI2<br>3: DI3<br>4: DI4<br>5: DI5<br>6: DI6<br>7: DI7<br>8: DI8 | 0       | -            | Real-time   | <a href="#">"H05_en.46" on page 186</a> |
| H05.47    | 2005-30h              | Frequency-division Z pulse width                                                   | 0 us to 400 us                                                                                  | 0       | us           | Real-time   | <a href="#">"H05_en.47" on page 187</a> |
| H05.48    | 2005-31h              | Frequency-division output dead zone setting threshold                              | 0–255                                                                                           | 0       | -            | Real-time   | <a href="#">"H05_en.48" on page 187</a> |
| H05.50    | 2005-33h              | Mechanical gear ratio in absolute position rotation mode (numerator)               | 1–65535                                                                                         | 1       | -            | At stop     | <a href="#">"H05_en.50" on page 187</a> |
| H05.51    | 2005-34h              | Mechanical gear ratio in absolute position rotation mode (denominator)             | 1–65535                                                                                         | 1       | -            | At stop     | <a href="#">"H05_en.51" on page 188</a> |
| H05.52    | 2005-35h              | Pulses per revolution of the load in absolute position rotation mode (low 32 bits) | 0 to 4294967295                                                                                 | 0       | Encoder unit | At stop     | <a href="#">"H05_en.52" on page 188</a> |

| Parameter | Communication Address | Name                                                                                | Value                            | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------------------------------------------------|----------------------------------|---------|--------------|-------------|-----------------------------------------|
| H05.54    | 2005-37h              | Pulses per revolution of the load in absolute position rotation mode (high 32 bits) | 0 to 4294967295                  | 0       | Encoder unit | At stop     | <a href="#">"H05_en.54" on page 188</a> |
| H05.58    | 2005-3Bh              | Torque threshold in homing upon hit-and-stop                                        | 0.0% to 400.0%                   | 100.0   | %            | Real-time   | <a href="#">"H05_en.58" on page 189</a> |
| H05.59    | 2005-3Ch              | Positioning window time                                                             | 0 ms–30000 ms                    | 0       | ms           | Real-time   | <a href="#">"H05_en.59" on page 189</a> |
| H05.60    | 2005-3Dh              | Hold time of positioning completed                                                  | 0 ms–30000 ms                    | 0       | ms           | Real-time   | <a href="#">"H05_en.60" on page 189</a> |
| H05.66    | 2005-43h              | Homing time unit                                                                    | 0: 1 ms<br>1: 10 ms<br>2: 100 ms | 2       | -            | At stop     | <a href="#">"H05_en.66" on page 190</a> |
| H05.67    | 2005-44h              | Offset between zero point and single-turn absolute position                         | -2147483648 to 2147483647        | 0       | Encoder unit | At stop     | <a href="#">"H05_en.67" on page 190</a> |
| H05.71    | 2005-48h              | Motor Z signal width                                                                | 1 ms–100 ms                      | 4       | ms           | Real-time   | <a href="#">"H05_en.71" on page 191</a> |
| H05.72    | 2005-49h              | External speed feedforward source selection                                         | 0: 60B1<br>1: AI1<br>2: AI2      | 1       | -            | Real-time   | <a href="#">"H05_en.72" on page 191</a> |

## 1.7 H06 Speed Control Parameters

| Parameter | Communication Address | Name                                  | Value                                                                       | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------------|-----------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H06.00    | 2006-01h              | Source of main speed reference A      | 0: Digital setting (H06.03)<br>1: AI1<br>2: AI2                             | 0       | -    | At stop     | <a href="#">"H06_en.00" on page 191</a> |
| H06.01    | 2006-02h              | Source of auxiliary speed reference B | 0: Digital setting (H06.03)<br>1: AI1<br>2: AI2<br>5: Multi-speed reference | 1       | -    | At stop     | <a href="#">"H06_en.01" on page 192</a> |

| Parameter | Communication Address | Name                                | Value                                                                                                                                        | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H06.02    | 2006-03h              | Speed reference source              | 0: Source of main speed reference A<br>1: Source of auxiliary speed reference B<br>2: A+B<br>3: Switched between A and B<br>4: Communication | 0       | -            | At stop     | <a href="#">"H06_en.02" on page 192</a> |
| H06.03    | 2006-04h              | Speed reference set through keypad  | -10000[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                                                         | 200     | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.03" on page 193</a> |
| H06.04    | 2006-05h              | DI jog speed reference              | 0[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                                                              | 150     | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.04" on page 193</a> |
| H06.05    | 2006-06h              | Acc. ramp time of speed reference   | 0 ms to 65535 ms                                                                                                                             | 0       | ms           | Real-time   | <a href="#">"H06_en.05" on page 194</a> |
| H06.06    | 2006-07h              | Dec. ramp time of speed reference   | 0 ms to 65535 ms                                                                                                                             | 0       | ms           | Real-time   | <a href="#">"H06_en.06" on page 194</a> |
| H06.07    | 2006-08h              | Maximum speed limit                 | 0[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                                                              | 7000    | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.07" on page 194</a> |
| H06.08    | 2006-09h              | Forward speed threshold             | 0[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                                                              | 7000    | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.08" on page 195</a> |
| H06.09    | 2006-0Ah              | Reverse speed threshold             | 0[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                                                              | 7000    | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.09" on page 195</a> |
| H06.10    | 2006-0Bh              | Deceleration unit in emergency stop | 0: Multiplied by 1<br>1: Multiplied by 10<br>2: Multiplied by 100                                                                            | 0       | -            | At stop     | <a href="#">"H06_en.10" on page 195</a> |
| H06.11    | 2006-0Ch              | Torque feedforward control          | 0: No torque feedforward<br>1: Internal torque feedforward<br>3: STune mode 5                                                                | 1       | -            | Real-time   | <a href="#">"H06_en.11" on page 196</a> |
| H06.12    | 2006-0Dh              | Acceleration ramp time of jog speed | 0 ms to 65535 ms                                                                                                                             | 10      | ms           | Real-time   | <a href="#">"H06_en.12" on page 196</a> |
| H06.13    | 2006-0Eh              | Speed feedforward smoothing filter  | 0us to 65535us                                                                                                                               | 0       | us           | Real-time   | <a href="#">"H06_en.13" on page 196</a> |
| H06.15    | 2006-10h              | Zero clamp speed threshold          | 0[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                                                              | 10      | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.15" on page 196</a> |

| Parameter | Communication Address | Name                                                          | Value                            | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------------------------------------|----------------------------------|---------|--------------|-------------|-----------------------------------------|
| H06.16    | 2006-11h              | Threshold of TGON (motor rotation) signal                     | 0[mm/s]/[rpm]–1000[mm/s]/[rpm]   | 20      | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.16" on page 197</a> |
| H06.17    | 2006-12h              | Threshold of V-Cmp (speed matching) signal                    | 0[mm/s]/[rpm]–100[mm/s]/[rpm]    | 10      | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.17" on page 197</a> |
| H06.18    | 2006-13h              | Threshold of speed reach signal                               | 20[mm/s]/[rpm]–10000[mm/s]/[rpm] | 1000    | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.18" on page 197</a> |
| H06.19    | 2006-14h              | Threshold of zero speed output signal                         | 1[mm/s]/[rpm]–10000[mm/s]/[rpm]  | 10      | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.19" on page 198</a> |
| H06.40    | 2006-29h              | Ramp 1 deceleration time                                      | 0 ms to 65535 ms                 | 0       | ms           | Real-time   | <a href="#">"H06_en.40" on page 198</a> |
| H06.41    | 2006-2Ah              | Ramp 2 deceleration time                                      | 0 ms to 65535 ms                 | 0       | ms           | Real-time   | <a href="#">"H06_en.41" on page 198</a> |
| H06.50    | 2006-33h              | Speed S-curve enable switch                                   | 0: Disabled<br>1: Enabled        | 1       | -            | At stop     | <a href="#">"H06_en.50" on page 198</a> |
| H06.51    | 2006-34h              | Increasing acceleration of speed S-curve acceleration segment | 0.0% to 100.0%                   | 50.0    | %            | At stop     | <a href="#">"H06_en.51" on page 199</a> |
| H06.52    | 2006-35h              | Decreasing acceleration of speed S-curve acceleration segment | 0.0% to 100.0%                   | 50.0    | %            | At stop     | <a href="#">"H06_en.52" on page 199</a> |
| H06.53    | 2006-36h              | Decreasing deceleration of speed S-curve deceleration segment | 0.0% to 100.0%                   | 50.0    | %            | At stop     | <a href="#">"H06_en.53" on page 199</a> |
| H06.54    | 2006-37h              | Decreasing acceleration of speed S-curve deceleration segment | 0.0% to 100.0%                   | 50.0    | %            | At stop     | <a href="#">"H06_en.54" on page 199</a> |

## 1.8 H07 Torque Control Parameters

| Parameter | Communication Address | Name                                    | Value                                                                                                                                                                                                                                                | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H07.00    | 2007-01h              | Source of main torque reference A       | 0: Keypad (H07.03)<br>1: AI1<br>2: AI2                                                                                                                                                                                                               | 0       | -    | At stop     | <a href="#">"H07_en.00" on page 200</a> |
| H07.01    | 2007-02h              | Source of auxiliary torque reference B  | 0: Keypad (H07.03)<br>1: AI1<br>2: AI2                                                                                                                                                                                                               | 1       | -    | At stop     | <a href="#">"H07_en.01" on page 200</a> |
| H07.02    | 2007-03h              | Torque reference source                 | 0: Source of main torque reference A<br>1: Source of auxiliary torque reference B<br>2: Source of A+B<br>3: Switched between A and B<br>4: Communication                                                                                             | 0       | -    | At stop     | <a href="#">"H07_en.02" on page 200</a> |
| H07.03    | 2007-04h              | Torque reference set through keypad     | -400.0% to 400.0%                                                                                                                                                                                                                                    | 0.0     | %    | Real-time   | <a href="#">"H07_en.03" on page 201</a> |
| H07.05    | 2007-06h              | Torque reference filter time constant 1 | 0.00 ms to 30.00 ms                                                                                                                                                                                                                                  | 0.50    | ms   | Real-time   | <a href="#">"H07_en.05" on page 201</a> |
| H07.06    | 2007-07h              | Torque reference filter time constant 2 | 0.00 ms to 30.00 ms                                                                                                                                                                                                                                  | 0.27    | ms   | Real-time   | <a href="#">"H07_en.06" on page 202</a> |
| H07.07    | 2007-08h              | Torque Limit source                     | 0: Positive/Negative internal torque limit<br>1: Internal or external limit as defined by DI<br>2: T_LMT<br>3: T_LMT or external limit as defined by DI (FunIN.16 or FunIN.17)<br>4: T_LMT or internal limit (FunIN.16 or FunIN.17) as defined by DI | 0       | -    | Real-time   | <a href="#">"H07_en.07" on page 202</a> |
| H07.08    | 2007-09h              | T-LMT selection                         | 1: AI1<br>2: AI2                                                                                                                                                                                                                                     | 1       | -    | Real-time   | <a href="#">"H07_en.08" on page 202</a> |
| H07.09    | 2007-0Ah              | Positive internal torque limit          | 0.0% to 400.0%                                                                                                                                                                                                                                       | 350.0   | %    | Real-time   | <a href="#">"H07_en.09" on page 203</a> |
| H07.10    | 2007-0Bh              | Negative internal torque limit          | 0.0% to 400.0%                                                                                                                                                                                                                                       | 350.0   | %    | Real-time   | <a href="#">"H07_en.10" on page 203</a> |

| Parameter | Communication Address | Name                                                 | Value                                                                       | Default | Unit         | Change Mode  | Page                                    |
|-----------|-----------------------|------------------------------------------------------|-----------------------------------------------------------------------------|---------|--------------|--------------|-----------------------------------------|
| H07.11    | 2007-0Ch              | Positive external torque limit                       | 0.0% to 400.0%                                                              | 350.0   | %            | Real-time    | <a href="#">"H07_en.11" on page 203</a> |
| H07.12    | 2007-0Dh              | Negative external torque limit                       | 0.0% to 400.0%                                                              | 350.0   | %            | Real-time    | <a href="#">"H07_en.12" on page 203</a> |
| H07.15    | 2007-10h              | Emergency-stop torque                                | 0.0% to 400.0%                                                              | 100.0   | %            | Real-time    | <a href="#">"H07_en.15" on page 204</a> |
| H07.17    | 2007-12h              | Speed limit source                                   | 0: Internal speed limit<br>1: V-LMT<br>2: H07.19 or H07.20 as defined by DI | 0       | -            | Real-time    | <a href="#">"H07_en.17" on page 204</a> |
| H07.18    | 2007-13h              | V-LMT selection                                      | 1: AI1<br>2: AI2                                                            | 1       | -            | Real-time    | <a href="#">"H07_en.18" on page 204</a> |
| H07.19    | 2007-14h              | Positive speed limit/Speed limit 1 in torque control | 0[mm/s]/[rpm]–10000[mm/s]/[rpm]                                             | 3000    | [mm/s]/[rpm] | Real-time    | <a href="#">"H07_en.19" on page 205</a> |
| H07.20    | 2007-15h              | Negative speed limit/Speed limit 2 in torque control | 0[mm/s]/[rpm]–10000[mm/s]/[rpm]                                             | 3000    | [mm/s]/[rpm] | Real-time    | <a href="#">"H07_en.20" on page 205</a> |
| H07.21    | 2007-16h              | Torque reach base value                              | 0.0% to 400.0%                                                              | 0.0     | %            | Real-time    | <a href="#">"H07_en.21" on page 205</a> |
| H07.22    | 2007-17h              | Torque reach valid value                             | 0.0% to 400.0%                                                              | 20.0    | %            | Real-time    | <a href="#">"H07_en.22" on page 205</a> |
| H07.23    | 2007-18h              | Torque reach invalid value                           | 0.0% to 400.0%                                                              | 10.0    | %            | Real-time    | <a href="#">"H07_en.23" on page 206</a> |
| H07.24    | 2007-19h              | Field weakening depth                                | 60% to 115%                                                                 | 115     | %            | Real-time    | <a href="#">"H07_en.24" on page 206</a> |
| H07.25    | 2007-1Ah              | Max. permissible demagnetizing current               | 0% to 300%                                                                  | 100     | %            | Real-time    | <a href="#">"H07_en.25" on page 206</a> |
| H07.26    | 2007-1Bh              | Field weakening selection                            | 0: Disabled<br>1: Enabled                                                   | 0       | -            | At stop      | <a href="#">"H07_en.26" on page 207</a> |
| H07.27    | 2007-1Ch              | Flux weakening gain                                  | 0.001 kHz–1.000 kHz                                                         | 0.030   | kHz          | Real-time    | <a href="#">"H07_en.27" on page 207</a> |
| H07.28    | 2007-1Dh              | Speed of flux weakening point                        | 0–65535                                                                     | 0       | -            | Unchangeable | <a href="#">"H07_en.28" on page 207</a> |



| Parameter | Communication Address | Name                                         | Value                                     | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------------------|-------------------------------------------|---------|------|-------------|-----------------------------------------|
| H07.36    | 2007-25h              | Time constant of low-pass filter 2           | 0.00 ms to 10.00 ms                       | 0.00    | ms   | Real-time   | <a href="#">"H07_en.36" on page 207</a> |
| H07.37    | 2007-26h              | Torque reference filter selection            | 0: First-order filter<br>1: Biquad filter | 0       | -    | Real-time   | <a href="#">"H07_en.37" on page 208</a> |
| H07.38    | 2007-27h              | Biquad filter attenuation ratio              | 0–50                                      | 16      | -    | Real-time   | <a href="#">"H07_en.38" on page 208</a> |
| H07.40    | 2007-29h              | Speed limit threshold in torque control mode | 0 ms to 300 ms                            | 10      | ms   | Real-time   | <a href="#">"H07_en.40" on page 208</a> |
| H07.42    | 2007-2Bh              | Biquad low pass filter damping coefficient   | 0.001–10.000                              | 1.000   | -    | Real-time   | <a href="#">"H07_en.42" on page 209</a> |

## 1.9 H08 Gain Parameters

| Parameter | Communication Address | Name                                  | Value                                                                                                                                                           | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H08.00    | 2008-01h              | Speed loop gain                       | 0.1 Hz–2000.0 Hz                                                                                                                                                | 40.0    | Hz   | Real-time   | <a href="#">"H08_en.00" on page 209</a> |
| H08.01    | 2008-02h              | Speed loop integral time constant     | 0.15 ms–512.00 ms                                                                                                                                               | 19.89   | ms   | Real-time   | <a href="#">"H08_en.01" on page 209</a> |
| H08.02    | 2008-03h              | Position loop gain                    | 0.1 Hz–2000.0 Hz                                                                                                                                                | 64.0    | Hz   | Real-time   | <a href="#">"H08_en.02" on page 210</a> |
| H08.03    | 2008-04h              | 2nd speed loop gain                   | 0.1 Hz–2000.0 Hz                                                                                                                                                | 75.0    | Hz   | Real-time   | <a href="#">"H08_en.03" on page 210</a> |
| H08.04    | 2008-05h              | 2nd speed loop integral time constant | 0.15 ms–512.00 ms                                                                                                                                               | 10.61   | ms   | Real-time   | <a href="#">"H08_en.04" on page 210</a> |
| H08.05    | 2008-06h              | 2nd position loop gain                | 0.1 Hz–2000.0 Hz                                                                                                                                                | 120.0   | Hz   | Real-time   | <a href="#">"H08_en.05" on page 211</a> |
| H08.08    | 2008-09h              | 2nd gain mode setting                 | 0: Fixed to the 1st gain, switched between P and PI as defined by bit26 of external 60FEh<br>1: Switched between the 1st and 2nd gain sets as defined by H08.09 | 1       | -    | Real-time   | <a href="#">"H08_en.08" on page 211</a> |

| Parameter | Communication Address | Name                                      | Value                                                                                                                                                                                                                                                                                                                                                                                                                                            | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H08.09    | 2008-0Ah              | Gain switchover condition                 | 0: Fixed to the 1st gain set (PS)<br>1: Switched as defined by bit26 of 60FEh<br>2: Torque reference too large (PS)<br>3: Speed reference too large (PS)<br>4: Speed reference change rate too large (PS)<br>5: Speed reference low/high speed threshold (PS)<br>6: Position deviation too large (P)<br>7: Position reference available (P)<br>8: Positioning unfinished (P)<br>9: Actual speed (P)<br>10: Position reference + Actual speed (P) | 0       | -    | Real-time   | <a href="#">"H08_en.09" on page 211</a> |
| H08.10    | 2008-0Bh              | Gain switchover delay                     | 0.0 ms–1000.0 ms                                                                                                                                                                                                                                                                                                                                                                                                                                 | 5.0     | ms   | Real-time   | <a href="#">"H08_en.10" on page 213</a> |
| H08.11    | 2008-0Ch              | Gain switchover level                     | 0–20000                                                                                                                                                                                                                                                                                                                                                                                                                                          | 50      | -    | Real-time   | <a href="#">"H08_en.11" on page 214</a> |
| H08.12    | 2008-0Dh              | Gain switchover hysteresis                | 0–20000                                                                                                                                                                                                                                                                                                                                                                                                                                          | 30      | -    | Real-time   | <a href="#">"H08_en.12" on page 214</a> |
| H08.13    | 2008-0Eh              | Position gain switchover time             | 0.0 ms–1000.0 ms                                                                                                                                                                                                                                                                                                                                                                                                                                 | 3.0     | ms   | Real-time   | <a href="#">"H08_en.13" on page 214</a> |
| H08.15    | 2008-10h              | Load moment of inertia ratio              | 0.00–120.00                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1.00    | -    | Real-time   | <a href="#">"H08_en.15" on page 215</a> |
| H08.17    | 2008-12h              | Zero phase delay                          | 0.0 ms–4.0 ms                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.0     | ms   | Real-time   | <a href="#">"H08_en.17" on page 215</a> |
| H08.18    | 2008-13h              | Time constant of speed feedforward filter | 0.00 ms–64.00 ms                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.50    | ms   | Real-time   | <a href="#">"H08_en.18" on page 215</a> |
| H08.19    | 2008-14h              | Speed feedforward gain                    | 0.0% to 100.0%                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.0     | %    | Real-time   | <a href="#">"H08_en.19" on page 216</a> |
| H08.20    | 2008-15h              | Torque feedforward filter time constant   | 0.00 ms–64.00 ms                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.50    | ms   | Real-time   | <a href="#">"H08_en.20" on page 216</a> |

| Parameter | Communication Address | Name                                                | Value                                                                 | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------------------------------|-----------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H08.21    | 2008-16h              | Torque feedforward gain                             | 0.0% to 300.0%                                                        | 0.0     | %    | Real-time   | <a href="#">"H08_en.21" on page 216</a> |
| H08.22    | 2008-17h              | Speed feedback filtering option                     | 0: Inhibited<br>1: 2 times<br>2: 4 times<br>3: 8 times<br>4: 16 times | 0       | -    | At stop     | <a href="#">"H08_en.22" on page 217</a> |
| H08.23    | 2008-18h              | Cutoff frequency of speed feedback low-pass filter  | 100 Hz–8000 Hz                                                        | 8000    | Hz   | Real-time   | <a href="#">"H08_en.23" on page 217</a> |
| H08.24    | 2008-19h              | PDFF control coefficient                            | 0.0% to 200.0%                                                        | 100.0   | %    | Real-time   | <a href="#">"H08_en.24" on page 218</a> |
| H08.25    | 2008-1Ah              | Speed measurement method                            | 0: M-method<br>1: MT-method                                           | 0       | -    | At stop     | <a href="#">"H08_en.25" on page 218</a> |
| H08.27    | 2008-1Ch              | Speed observer cutoff frequency                     | 50 Hz–600 Hz                                                          | 170     | Hz   | Real-time   | <a href="#">"H08_en.27" on page 219</a> |
| H08.28    | 2008-1Dh              | Speed observer inertia correction coefficient       | 1% to 1600%                                                           | 100     | %    | Real-time   | <a href="#">"H08_en.28" on page 219</a> |
| H08.29    | 2008-1Eh              | Speed observer filter time                          | 0.00 ms–10.00 ms                                                      | 0.80    | ms   | Real-time   | <a href="#">"H08_en.29" on page 219</a> |
| H08.31    | 2008-20h              | Disturbance cutoff frequency                        | 1 Hz–4000 Hz                                                          | 600     | Hz   | Real-time   | <a href="#">"H08_en.31" on page 219</a> |
| H08.32    | 2008-21h              | Disturbance compensation gain                       | 0% to 100%                                                            | 0       | %    | Real-time   | <a href="#">"H08_en.32" on page 220</a> |
| H08.33    | 2008-22h              | Disturbance observer inertia correction coefficient | 1% to 1600%                                                           | 100     | %    | Real-time   | <a href="#">"H08_en.33" on page 220</a> |
| H08.40    | 2008-29h              | Speed observer selection                            | 0: Disabled<br>1: Enabled                                             | 0       | -    | Real-time   | <a href="#">"H08_en.40" on page 220</a> |
| H08.42    | 2008-2Bh              | Model control selection                             | 0: Disabled<br>1: Enabled<br>2: Reserved                              | 0       | -    | Real-time   | <a href="#">"H08_en.42" on page 221</a> |
| H08.43    | 2008-2Ch              | Model gain                                          | 0.1–2000.0                                                            | 40.0    | -    | Real-time   | <a href="#">"H08_en.43" on page 221</a> |
| H08.46    | 2008-2Fh              | Feedforward value                                   | 0.0–102.4                                                             | 95.0    | -    | Real-time   | <a href="#">"H08_en.46" on page 221</a> |

| Parameter | Communication Address | Name                                                            | Value                     | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------------------------------------------|---------------------------|---------|------|-------------|-----------------------------------------|
| H08.53    | 2008-36h              | Medium- and low-frequency jitter suppression frequency 3        | 0.0 Hz–300.0 Hz           | 0.0     | Hz   | Real-time   | <a href="#">"H08_en.53" on page 222</a> |
| H08.54    | 2008-37h              | Medium- and low-frequency jitter suppression compensation 3     | 0% to 200%                | 0       | %    | Real-time   | <a href="#">"H08_en.54" on page 222</a> |
| H08.56    | 2008-39h              | Medium- and low-frequency jitter suppression phase modulation 3 | 0% to 600%                | 100     | %    | Real-time   | <a href="#">"H08_en.56" on page 222</a> |
| H08.59    | 2008-3Ch              | Medium- and low-frequency jitter suppression frequency 4        | 0.0 Hz–300.0 Hz           | 0.0     | Hz   | Real-time   | <a href="#">"H08_en.59" on page 222</a> |
| H08.60    | 2008-3Dh              | Medium- and low-frequency jitter suppression compensation 4     | 0% to 200%                | 0       | %    | Real-time   | <a href="#">"H08_en.60" on page 223</a> |
| H08.61    | 2008-3Eh              | Medium- and low-frequency jitter suppression phase modulation 4 | 0% to 600%                | 100     | %    | Real-time   | <a href="#">"H08_en.61" on page 223</a> |
| H08.62    | 2008-3Fh              | Position loop integral time constant                            | 0.15–512.00               | 512.00  | -    | Real-time   | <a href="#">"H08_en.62" on page 223</a> |
| H08.63    | 2008-40h              | 2nd position loop integral time constant                        | 0.15–512.00               | 512.00  | -    | Real-time   | <a href="#">"H08_en.63" on page 224</a> |
| H08.64    | 2008-41h              | Speed observer feedback source                                  | 0: Disabled<br>1: Enabled | 0       | -    | Real-time   | <a href="#">"H08_en.64" on page 224</a> |
| H08.65    | 2008-42h              | Zero deviation control selection                                | 0: Disabled<br>1: Enabled | 0       | -    | Real-time   | <a href="#">"H08_en.65" on page 224</a> |

| Parameter | Communication Address | Name                                           | Value                                                                                                                                                                                        | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H08.66    | 2008-43h              | Zero deviation control position average filter | 0.0 ms–320.0 ms                                                                                                                                                                              | 5.0     | ms   | Real-time   | <a href="#">"H08_en.66" on page 224</a> |
| H08.68    | 2008-45h              | Speed feedforward of zero deviation control    | 0.0% to 100.0%                                                                                                                                                                               | 100.0   | %    | Real-time   | <a href="#">"H08_en.68" on page 225</a> |
| H08.69    | 2008-46h              | Torque feedforward of zero deviation control   | 0.0% to 100.0%                                                                                                                                                                               | 100.0   | %    | Real-time   | <a href="#">"H08_en.69" on page 225</a> |
| H08.90    | 2008-5Bh              | Encoder scale spacing ripple suppressor enable | 0: Inhibited<br>1: 1st group activated only-adaptive mode<br>2: 1st group activated only-hysteresis mode<br>3: Two groups activated-adaptive mode<br>4: Two groups activated-hysteresis mode | 0       | -    | Real-time   | <a href="#">"H08_en.90" on page 225</a> |

## 1.10 H09 Auto-tuning Parameters

| Parameter | Communication Address | Name                              | Value                                                                                                                                                                                                                                                                                                                                                                                | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H09.00    | 2009-01h              | Auto-adjustment mode              | 0: Disabled, manual gain tuning required<br><br>1: Enabled, gain parameters generated automatically based on the stiffness level<br>2: Positioning mode, gain parameters generated automatically based on the stiffness level<br>3: Interpolation mode+Inertia auto-tuning<br>4: Normal mode+Inertia auto-tuning<br>5: Stune mode 5<br>6: Quick positioning mode+Inertia auto-tuning | 4       | -            | Real-time   | <a href="#">"H09_en.00" on page 226</a> |
| H09.01    | 2009-02h              | Stiffness level selection         | 0–41                                                                                                                                                                                                                                                                                                                                                                                 | 15      | -            | Real-time   | <a href="#">"H09_en.01" on page 226</a> |
| H09.02    | 2009-03h              | Mode selection of adaptive notch  | 0: Adaptive notch no longer updated<br>1: One adaptive notch activated (3rd notch)<br>2: Two adaptive notches activated (3rd and 4th notches)<br>3: Resonance point tested only (displayed in H09.24)<br>4: Adaptive notch cleared, values of 3rd and 4th notches restored to default                                                                                                | 0       | -            | Real-time   | <a href="#">"H09_en.02" on page 227</a> |
| H09.03    | 2009-04h              | Online inertia auto-tuning mode   | 0: Disabled<br>1: Enabled, changing slowly<br>2: Enabled, changing normally<br>3: Enabled, changing quickly                                                                                                                                                                                                                                                                          | 0       | -            | Real-time   | <a href="#">"H09_en.03" on page 227</a> |
| H09.05    | 2009-06h              | Offline inertia auto-tuning mode  | 0: Bi-directional<br>1: Unidirectional                                                                                                                                                                                                                                                                                                                                               | 0       | -            | At stop     | <a href="#">"H09_en.05" on page 228</a> |
| H09.06    | 2009-07h              | Max. speed of inertia auto-tuning | 50[mm/s]/[rpm]–1000[mm/s]/[rpm]                                                                                                                                                                                                                                                                                                                                                      | 500     | [mm/s]/[rpm] | At stop     | <a href="#">"H09_en.06" on page 228</a> |

| Parameter | Communication Address | Name                                                                    | Value                           | Default | Unit       | Change Mode  | Page                                    |
|-----------|-----------------------|-------------------------------------------------------------------------|---------------------------------|---------|------------|--------------|-----------------------------------------|
| H09.07    | 2009-08h              | Time constant for accelerating to max. speed during inertia auto-tuning | 20 ms–800 ms                    | 125     | ms         | At stop      | <a href="#">"H09_en.07" on page 228</a> |
| H09.08    | 2009-09h              | Interval time after an individual inertia auto-tuning                   | 50 ms–10000 ms                  | 800     | ms         | At stop      | <a href="#">"H09_en.08" on page 229</a> |
| H09.09    | 2009-0Ah              | Motor rotating distance per inertia auto-tuning                         | 0.00[mm]/[Rev]–100.00[mm]/[Rev] | 1.00    | [mm]/[Rev] | Real-time    | <a href="#">"H09_en.09" on page 229</a> |
| H09.11    | 2009-0Ch              | Vibration threshold                                                     | 0.0% to 100.0%                  | 5.0     | %          | Real-time    | <a href="#">"H09_en.11" on page 229</a> |
| H09.12    | 2009-0Dh              | Frequency of the 1st notch                                              | 50 Hz–8000 Hz                   | 8000    | Hz         | Real-time    | <a href="#">"H09_en.12" on page 230</a> |
| H09.13    | 2009-0Eh              | Width level of the 1st notch                                            | 0–20                            | 2       | -          | Real-time    | <a href="#">"H09_en.13" on page 230</a> |
| H09.14    | 2009-0Fh              | Depth level of the 1st notch                                            | 0–99                            | 0       | -          | Real-time    | <a href="#">"H09_en.14" on page 230</a> |
| H09.15    | 2009-10h              | Frequency of the 2nd notch                                              | 50 Hz–8000 Hz                   | 8000    | Hz         | Real-time    | <a href="#">"H09_en.15" on page 231</a> |
| H09.16    | 2009-11h              | Width level of the 2nd notch                                            | 0–20                            | 2       | -          | Real-time    | <a href="#">"H09_en.16" on page 231</a> |
| H09.17    | 2009-12h              | Depth level of the 2nd notch                                            | 0–99                            | 0       | -          | Real-time    | <a href="#">"H09_en.17" on page 231</a> |
| H09.18    | 2009-13h              | Frequency of the 3rd notch                                              | 50 Hz–8000 Hz                   | 8000    | Hz         | Real-time    | <a href="#">"H09_en.18" on page 231</a> |
| H09.19    | 2009-14h              | Width level of the 3rd notch                                            | 0–20                            | 2       | -          | Real-time    | <a href="#">"H09_en.19" on page 232</a> |
| H09.20    | 2009-15h              | Depth level of the 3rd notch                                            | 0–99                            | 0       | -          | Real-time    | <a href="#">"H09_en.20" on page 232</a> |
| H09.21    | 2009-16h              | Frequency of the 4th notch                                              | 50 Hz–8000 Hz                   | 8000    | Hz         | Real-time    | <a href="#">"H09_en.21" on page 232</a> |
| H09.22    | 2009-17h              | Width level of the 4th notch                                            | 0–20                            | 2       | -          | Real-time    | <a href="#">"H09_en.22" on page 232</a> |
| H09.23    | 2009-18h              | Depth level of the 4th notch                                            | 0–99                            | 0       | -          | Real-time    | <a href="#">"H09_en.23" on page 233</a> |
| H09.24    | 2009-19h              | Auto-tuned resonance frequency                                          | 0 Hz–5000 Hz                    | 0       | Hz         | Unchangeable | <a href="#">"H09_en.24" on page 233</a> |

| Parameter | Communication Address | Name                                                                     | Value                                                                                                                                                                                                                                                     | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H09.32    | 2009-21h              | Gravity compensation value                                               | 0.0% to 100.0%                                                                                                                                                                                                                                            | 0.0     | %    | Real-time   | <a href="#">"H09_en.32" on page 233</a> |
| H09.33    | 2009-22h              | Positive friction compensation value                                     | 0.0% to 100.0%                                                                                                                                                                                                                                            | 0.0     | %    | Real-time   | <a href="#">"H09_en.33" on page 234</a> |
| H09.34    | 2009-23h              | Negative friction compensation value                                     | -100.0% to 0.0%                                                                                                                                                                                                                                           | 0.0     | %    | Real-time   | <a href="#">"H09_en.34" on page 234</a> |
| H09.35    | 2009-24h              | Friction compensation speed                                              | 0.0–20.0                                                                                                                                                                                                                                                  | 2.0     | -    | Real-time   | <a href="#">"H09_en.35" on page 234</a> |
| H09.36    | 2009-25h              | Friction compensation speed                                              | 0: Slow mode+Speed reference<br>1: Slow mode+Model speed<br>2: Slow mode+Speed feedback<br>3: Slow mode+Observe speed<br>16: Quick mode +Speed reference<br>17: Quick mode +Model speed<br>18: Quick mode +Speed feedback<br>19: Quick mode+Observe speed | 0       | -    | Real-time   | <a href="#">"H09_en.36" on page 234</a> |
| H09.37    | 2009-26h              | Vibration monitoring time                                                | 0–65535                                                                                                                                                                                                                                                   | 300     | -    | Real-time   | <a href="#">"H09_en.37" on page 235</a> |
| H09.38    | 2009-27h              | Frequency of low-frequency resonance suppression 1 at the mechanical end | 1.0 Hz–100.0 Hz                                                                                                                                                                                                                                           | 100.0   | Hz   | Real-time   | <a href="#">"H09_en.38" on page 235</a> |
| H09.39    | 2009-28h              | Low-frequency resonance suppression 1 at the mechanical end              | 0–3                                                                                                                                                                                                                                                       | 2       | -    | At stop     | <a href="#">"H09_en.39" on page 235</a> |



| Parameter | Communication Address | Name                                                                           | Value          | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|--------------------------------------------------------------------------------|----------------|---------|------|-------------|-----------------------------------------|
| H09.44    | 2009-2Dh              | Frequency of low-frequency resonance suppression 2 at mechanical load end      | 0.0–100.0      | 0.0     | -    | Real-time   | <a href="#">"H09_en.44" on page 236</a> |
| H09.45    | 2009-2Eh              | Responsiveness of low-frequency resonance suppression 2 at mechanical load end | 0.01–5.00      | 1.00    | -    | Real-time   | <a href="#">"H09_en.45" on page 236</a> |
| H09.47    | 2009-30h              | Width of low-frequency resonance suppression 2 at mechanical load end          | 0.00–2.00      | 1.00    | -    | Real-time   | <a href="#">"H09_en.47" on page 236</a> |
| H09.49    | 2009-32h              | Frequency of low-frequency resonance suppression 3 at mechanical load end      | 0.0–100.0      | 0.0     | -    | Real-time   | <a href="#">"H09_en.49" on page 237</a> |
| H09.50    | 2009-33h              | Responsiveness of low-frequency resonance suppression 3 at mechanical load end | 0.01–5.00      | 1.00    | -    | Real-time   | <a href="#">"H09_en.50" on page 237</a> |
| H09.52    | 2009-35h              | Width of low-frequency resonance suppression 3 at mechanical load end          | 0.00–2.00      | 1.00    | -    | Real-time   | <a href="#">"H09_en.52" on page 237</a> |
| H09.54    | 2009-37h              | Resonance detection torque threshold                                           | 0.0% to 300.0% | 50.0    | %    | Real-time   | <a href="#">"H09_en.54" on page 237</a> |
| H09.56    | 2009-39h              | Max. overshoot allowed by ETune                                                | 0–65535        | 2936    | -    | Real-time   | <a href="#">"H09_en.56" on page 238</a> |

| Parameter | Communication Address | Name                                             | Value                                                                                                            | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H09.57    | 2009-3Ah              | STune resonance suppression switchover frequency | 0 Hz–4000 Hz                                                                                                     | 650     | Hz   | Real-time   | <a href="#">"H09_en.57" on page 238</a> |
| H09.58    | 2009-3Bh              | STune resonance suppression reset selection      | 0: Disabled<br>1: Enabled                                                                                        | 0       | -    | Real-time   | <a href="#">"H09_en.58" on page 238</a> |
| H09.62    | 2009-3Fh              | Stune stop delay judgment                        | 0.00 ms–50.00 ms                                                                                                 | 1.00    | ms   | Real-time   | <a href="#">"H09_en.62" on page 239</a> |
| H09.63    | 2009-40h              | STune quick convergence speed                    | 0.00–50.00                                                                                                       | 1.00    | -    | Real-time   | <a href="#">"H09_en.63" on page 239</a> |
| H09.71    | 2009-48h              | Starting frequency                               | 0 Hz–8000 Hz                                                                                                     | 15      | Hz   | Real-time   | <a href="#">"H09_en.71" on page 239</a> |
| H09.72    | 2009-49h              | End frequency                                    | 0 Hz–8000 Hz                                                                                                     | 8000    | Hz   | Real-time   | <a href="#">"H09_en.72" on page 239</a> |
| H09.73    | 2009-4Ah              | Frequency subdivision                            | 0–500                                                                                                            | 50      | -    | Real-time   | <a href="#">"H09_en.73" on page 240</a> |
| H09.74    | 2009-4Bh              | Excitation amplitude                             | 0.0% to 400.0%                                                                                                   | 15.0    | %    | Real-time   | <a href="#">"H09_en.74" on page 240</a> |
| H09.75    | 2009-4Ch              | Starting frequency 2                             | 0 Hz–8000 Hz                                                                                                     | 500     | Hz   | Real-time   | <a href="#">"H09_en.75" on page 240</a> |
| H09.76    | 2009-4Dh              | Frequency subdivision 2                          | 0–1000                                                                                                           | 500     | -    | Real-time   | <a href="#">"H09_en.76" on page 241</a> |
| H09.77    | 2009-4Eh              | Biquad filter mode                               | 0: Disabled<br>1: First-order low-pass<br>2: Second-order low-pass<br>3: Notch<br>4: Lead-lag<br>5: User-defined | 0       | -    | Real-time   | <a href="#">"H09_en.77" on page 241</a> |
| H09.78    | 2009-4Fh              | Biquad filter numerator frequency                | 0 Hz–16000 Hz                                                                                                    | 8000    | Hz   | Real-time   | <a href="#">"H09_en.78" on page 241</a> |
| H09.79    | 2009-50h              | Biquad filter numerator damping coefficient      | 0.001–10.000                                                                                                     | 1.000   | -    | Real-time   | <a href="#">"H09_en.79" on page 241</a> |

| Parameter | Communication Address | Name                                          | Value         | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------------------------|---------------|---------|------|-------------|-----------------------------------------|
| H09.80    | 2009-51h              | Biquad filter denominator frequency           | 0 Hz–16000 Hz | 8000    | Hz   | Real-time   | <a href="#">"H09_en.80" on page 242</a> |
| H09.81    | 2009-52h              | Biquad filter denominator damping coefficient | 0.001–10.000  | 1.000   | -    | Real-time   | <a href="#">"H09_en.81" on page 242</a> |

## 1.11 H0A Fault and Protection Parameters

| Parameter | Communication Address | Name                                            | Value                                                                                                       | Default   | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-----------|--------------|-------------|-----------------------------------------|
| H0A.00    | 200A-01h              | Power input phase loss and failure protection   | 0: Enable<br>1: Disable                                                                                     | 0         | -            | Real-time   | <a href="#">"H0A_en.00" on page 242</a> |
| H0A.01    | 200A-02h              | Absolute position limit                         | 0: Disabled<br>1: Enabled<br>2: Enabled after homing                                                        | 0         | -            | Real-time   | <a href="#">"H0A_en.01" on page 243</a> |
| H0A.04    | 200A-05h              | Motor overload protection gain                  | 50–300                                                                                                      | 100       | -            | Real-time   | <a href="#">"H0A_en.04" on page 243</a> |
| H0A.08    | 200A-09h              | Overspeed threshold                             | 0[mm/s]/[rpm]–20000[mm/s]/[rpm]                                                                             | 0         | [mm/s]/[rpm] | Real-time   | <a href="#">"H0A_en.08" on page 243</a> |
| H0A.09    | 200A-0Ah              | Max. pulse input frequency in position control  | 100 kHz–16000 kHz                                                                                           | 16000     | kHz          | At stop     | <a href="#">"H0A_en.09" on page 244</a> |
| H0A.10    | 200A-0Bh              | Threshold of excessive local position deviation | 0 to 4294967295                                                                                             | 219895614 | Encoder unit | Real-time   | <a href="#">"H0A_en.10" on page 244</a> |
| H0A.12    | 200A-0Dh              | Runaway protection enable                       | 0: Disable<br>1: Enable                                                                                     | 1         | -            | Real-time   | <a href="#">"H0A_en.12" on page 245</a> |
| H0A.13    | 200A-0Eh              | Angle auto-tuning mode                          | 0: pre-positioning<br>1: Inching<br>6: Static hall<br>8: Closed-loop pre-positioning<br>9: Position locking | 0         | -            | At stop     | <a href="#">"H0A_en.13" on page 245</a> |
| H0A.17    | 200A-12h              | Reference pulse selection                       | 0: Pulse unit<br>1: Reference unit                                                                          | 0         | -            | At stop     | <a href="#">"H0A_en.17" on page 246</a> |

| Parameter | Communication Address | Name                                                    | Value                                                                                                                | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H0A.18    | 200A-13h              | IGBT over-temperature threshold                         | 120°C–175°C                                                                                                          | 140     | °C   | Real-time   | <a href="#">"H0A_en.18" on page 246</a> |
| H0A.19    | 200A-14h              | Filter time constant of touch probe 1                   | 0.00us–6.30us                                                                                                        | 2.00    | us   | Real-time   | <a href="#">"H0A_en.19" on page 246</a> |
| H0A.20    | 200A-15h              | Filter time constant of touch probe 2                   | 0.00us–6.30us                                                                                                        | 2.00    | us   | Real-time   | <a href="#">"H0A_en.20" on page 246</a> |
| H0A.21    | 200A-16h              | STO function display selection                          | 0–7                                                                                                                  | 0       | -    | Real-time   | <a href="#">"H0A_en.21" on page 247</a> |
| H0A.23    | 200A-18h              | TZ signal filter time                                   | 0–31                                                                                                                 | 15      | 25ns | At stop     | <a href="#">"H0A_en.23" on page 247</a> |
| H0A.24    | 200A-19h              | Filter time constant of low-speed pulse input terminal  | 0–255                                                                                                                | 30      | 25ns | At stop     | <a href="#">"H0A_en.24" on page 247</a> |
| H0A.25    | 200A-1Ah              | Speed display DO low-pass filter time                   | 0 ms–5000 ms                                                                                                         | 0       | ms   | At stop     | <a href="#">"H0A_en.25" on page 248</a> |
| H0A.26    | 200A-1Bh              | Motor overload detection                                | 0: Show motor overload alarm (E909.0) and fault (E620.0)<br>1: Hide motor overload alarm (E909.0) and fault (E620.0) | 0       | -    | Real-time   | <a href="#">"H0A_en.26" on page 248</a> |
| H0A.27    | 200A-1Ch              | Average filter time for speed display DO                | 0 ms–100 ms                                                                                                          | 50      | ms   | At stop     | <a href="#">"H0A_en.27" on page 248</a> |
| H0A.28    | 200A-1Dh              | Quadrature encoder filter time                          | 0–255                                                                                                                | 2       | 25ns | At stop     | <a href="#">"H0A_en.28" on page 249</a> |
| H0A.29    | 200A-1Eh              | Fully closed-loop encoder (ABZ) filter time             | 0–65535                                                                                                              | 4111    | 25ns | At stop     | <a href="#">"H0A_en.29" on page 249</a> |
| H0A.30    | 200A-1Fh              | Filter time constant of high-speed pulse input terminal | 0 ns–255 ns                                                                                                          | 2       | ns   | At stop     | <a href="#">"H0A_en.30" on page 249</a> |
| H0A.32    | 200A-21h              | Time threshold for locked motor overheat protection     | 10 ms–65535 ms                                                                                                       | 200     | ms   | Real-time   | <a href="#">"H0A_en.32" on page 249</a> |

| Parameter | Communication Address | Name                                            | Value                                                                                                                                                                                                                                                                                                                                                                            | Default     | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------|-------------|-----------------------------------------|
| H0A.33    | 200A-22h              | Locked motor overheat protection                | 0: Disabled<br>1: Enabled                                                                                                                                                                                                                                                                                                                                                        | 1           | -            | Real-time   | <a href="#">"H0A_en.33" on page 250</a> |
| H0A.36    | 200A-25h              | Encoder multi-turn overflow fault selection     | 0: Not hide<br>1: Hide                                                                                                                                                                                                                                                                                                                                                           | 0           | -            | Real-time   | <a href="#">"H0A_en.36" on page 250</a> |
| H0A.40    | 200A-29h              | Compensation function selection                 | bit0: Overtravel compensation<br>0: Enabled<br>1: Disabled<br>bit1: Touch probe rising edge compensation<br>0: Disabled<br>1: Enabled<br>bit2: Touch probe falling edge compensation<br>0: Disabled<br>1: Enabled<br>bit3: Touch probe scheme<br>0: New scheme<br>1: Old scheme (same as SV660N)<br>bit4: Probe 2 separate compensation time enable<br>0: Disabled<br>1: Enabled | 6           | -            | At stop     | <a href="#">"H0A_en.40" on page 250</a> |
| H0A.41    | 200A-2Ah              | Forward position of software position limit     | -2147483648 to 2147483647                                                                                                                                                                                                                                                                                                                                                        | 2147483647  | Encoder unit | At stop     | <a href="#">"H0A_en.41" on page 251</a> |
| H0A.43    | 200A-2Ch              | Reverse position of software position limit     | -2147483648 to 2147483647                                                                                                                                                                                                                                                                                                                                                        | -2147483648 | Encoder unit | At stop     | <a href="#">"H0A_en.43" on page 252</a> |
| H0A.50    | 200A-33h              | Encoder communication fault tolerance threshold | 0–31                                                                                                                                                                                                                                                                                                                                                                             | 31          | -            | Real-time   | <a href="#">"H0A_en.50" on page 252</a> |
| H0A.51    | 200A-34h              | Phase loss detection filter times               | 3–36                                                                                                                                                                                                                                                                                                                                                                             | 20          | 55ms         | Real-time   | <a href="#">"H0A_en.51" on page 252</a> |
| H0A.52    | 200A-35h              | Encoder temperature protection threshold        | 0°C–175°C                                                                                                                                                                                                                                                                                                                                                                        | 120         | °C           | Real-time   | <a href="#">"H0A_en.52" on page 253</a> |
| H0A.53    | 200A-36h              | Probe DI ON compensation time                   | -3000–3000                                                                                                                                                                                                                                                                                                                                                                       | 200         | 25ns         | Real-time   | <a href="#">"H0A_en.53" on page 253</a> |

| Parameter | Communication Address | Name                              | Value                                                                                           | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------------|-------------------------------------------------------------------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H0A.54    | 200A-37h              | Probe DI OFF compensation time    | -3000–3000                                                                                      | 1512    | 25ns         | Real-time   | <a href="#">"H0A_en.54" on page 253</a> |
| H0A.55    | 200A-38h              | Runaway current threshold         | 100.0% to 400.0%                                                                                | 200.0   | %            | Real-time   | <a href="#">"H0A_en.55" on page 253</a> |
| H0A.56    | 200A-39h              | Fault reset delay                 | 0 ms–60000 ms                                                                                   | 10000   | ms           | Real-time   | <a href="#">"H0A_en.56" on page 254</a> |
| H0A.57    | 200A-3Ah              | Runaway speed threshold           | 1[mm/s]/[rpm]–1000[mm/s]/[rpm]                                                                  | 50      | [mm/s]/[rpm] | Real-time   | <a href="#">"H0A_en.57" on page 254</a> |
| H0A.58    | 200A-3Bh              | Runaway speed filter time         | 0.1 ms–100.0 ms                                                                                 | 2.0     | ms           | Real-time   | <a href="#">"H0A_en.58" on page 254</a> |
| H0A.59    | 200A-3Ch              | Runaway protection detection time | 10 ms–1000 ms                                                                                   | 30      | ms           | Real-time   | <a href="#">"H0A_en.59" on page 254</a> |
| H0A.60    | 200A-3Dh              | Black box function mode           | 0: Disable<br>1: Any fault<br>2: Designated fault<br>3: Triggered based on designated condition | 1       | -            | Real-time   | <a href="#">"H0A_en.60" on page 255</a> |
| H0A.61    | 200A-3Eh              | Designated fault code             | 0.0–6553.5                                                                                      | 0.0     | -            | Real-time   | <a href="#">"H0A_en.61" on page 255</a> |
| H0A.62    | 200A-3Fh              | Trigger source                    | 0–25                                                                                            | 0       | -            | Real-time   | <a href="#">"H0A_en.62" on page 255</a> |
| H0A.63    | 200A-40h              | Trigger level                     | -2147483648–2147483647                                                                          | 0       | -            | Real-time   | <a href="#">"H0A_en.63" on page 256</a> |
| H0A.65    | 200A-42h              | Trigger level                     | 0: Rising edge<br>1: Equal<br>2: Falling edge<br>3: Edge-triggered                              | 0       | -            | Real-time   | <a href="#">"H0A_en.65" on page 256</a> |
| H0A.66    | 200A-43h              | Trigger position                  | 0% to 100%                                                                                      | 75      | %            | Real-time   | <a href="#">"H0A_en.66" on page 256</a> |
| H0A.67    | 200A-44h              | Sampling frequency                | 0: Current loop<br>1: Position loop<br>2: Main cycle                                            | 0       | -            | Real-time   | <a href="#">"H0A_en.67" on page 257</a> |
| H0A.70    | 200A-47h              | Overspeed threshold 2             | 0[mm/s]/[rpm]–20000[mm/s]/[rpm]                                                                 | 0       | [mm/s]/[rpm] | Real-time   | <a href="#">"H0A_en.70" on page 257</a> |
| H0A.71    | 200A-48h              | Internal function switch          | 0–65535                                                                                         | 4098    | -            | Real-time   | <a href="#">"H0A_en.71" on page 257</a> |
| H0A.72    | 200A-49h              | Maximum stop time in ramp-to-stop | 0 ms–65535 ms                                                                                   | 10000   | ms           | At stop     | <a href="#">"H0A_en.72" on page 258</a> |

| Parameter | Communication Address | Name                                                   | Value        | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|--------------------------------------------------------|--------------|---------|------|-------------|-----------------------------------------|
| H0A.73    | 200A-4Ah              | STO 24 V disconnection filter time                     | 1 ms–5 ms    | 1       | ms   | Real-time   | <a href="#">"H0A_en.73" on page 259</a> |
| H0A.74    | 200A-4Bh              | Filter time for two inconsistent STO channels          | 1 ms–1000 ms | 100     | ms   | Real-time   | <a href="#">"H0A_en.74" on page 259</a> |
| H0A.75    | 200A-4Ch              | Servo OFF delay after STO triggered                    | 0 ms–25 ms   | 20      | ms   | Real-time   | <a href="#">"H0A_en.75" on page 259</a> |
| H0A.87    | 200A-58h              | UWV Hall state monitoring window                       | 0–1000       | 1       | -    | Real-time   | <a href="#">"H0A_en.87" on page 259</a> |
| H0A.88    | 200A-59h              | DDL BiSS-C data alarm enable                           | 0–1          | 0       | -    | At stop     | <a href="#">"H0A_en.88" on page 260</a> |
| H0A.89    | 200A-5Ah              | Correct state of DDL BiSS-C data                       | 0–31         | 1       | -    | At stop     | <a href="#">"H0A_en.89" on page 260</a> |
| H0A.90    | 200A-5Bh              | Speed display low-pass filter time                     | 0 ms–100 ms  | 0       | ms   | At stop     | <a href="#">"H0A_en.90" on page 260</a> |
| H0A.91    | 200A-5Ch              | Moving average filter time for torque display values   | 0 ms–100 ms  | 0       | ms   | At stop     | <a href="#">"H0A_en.91" on page 261</a> |
| H0A.92    | 200A-5Dh              | Moving average filter time for position display values | 0 ms–100 ms  | 0       | ms   | At stop     | <a href="#">"H0A_en.92" on page 261</a> |
| H0A.93    | 200A-5Eh              | Low-pass filter time for voltage display values        | 0 ms–250 ms  | 0       | ms   | At stop     | <a href="#">"H0A_en.93" on page 261</a> |
| H0A.94    | 200A-5Fh              | Low-pass filter time for thermal display values        | 0 ms–250 ms  | 0       | ms   | At stop     | <a href="#">"H0A_en.94" on page 261</a> |

## 1.12 H0b Monitoring Parameters

| Parameter | Communication Address | Name                                    | Value                                | Default | Unit         | Change Mode  | Page                                    |
|-----------|-----------------------|-----------------------------------------|--------------------------------------|---------|--------------|--------------|-----------------------------------------|
| H0b.00    | 200b-01h              | Motor speed actual value                | -32767[mm/s]/[rpm]–32767[mm/s]/[rpm] | 0       | [mm/s]/[rpm] | Unchangeable | <a href="#">"H0b_en.00" on page 262</a> |
| H0b.01    | 200b-02h              | Speed reference                         | -32767[mm/s]/[rpm]–32767[mm/s]/[rpm] | 0       | [mm/s]/[rpm] | Unchangeable | <a href="#">"H0b_en.01" on page 262</a> |
| H0b.02    | 200b-03h              | Internal torque reference               | -500.0%–500.0%                       | 0.0     | %            | Unchangeable | <a href="#">"H0b_en.02" on page 262</a> |
| H0b.03    | 200b-04h              | Input (DI) signal monitoring            | 0–65535                              | 0       | -            | Unchangeable | <a href="#">"H0b_en.03" on page 263</a> |
| H0b.05    | 200b-06h              | Output (DO) signal monitoring           | 0–65535                              | 0       | -            | Unchangeable | <a href="#">"H0b_en.05" on page 263</a> |
| H0b.07    | 200b-08h              | Absolute position counter               | -2147483648p to 2147483647p          | 0       | p            | Unchangeable | <a href="#">"H0b_en.07" on page 263</a> |
| H0b.09    | 200b-0Ah              | Mechanical angle                        | 0.0° to 360.0°                       | 0.0     | °            | Unchangeable | <a href="#">"H0b_en.09" on page 264</a> |
| H0b.10    | 200b-0Bh              | Electrical angle                        | 0.0° to 360.0°                       | 0.0     | °            | Unchangeable | <a href="#">"H0b_en.10" on page 264</a> |
| H0b.12    | 200b-0Dh              | Average load ratio                      | 0.0% to 800.0%                       | 0.0     | %            | Unchangeable | <a href="#">"H0b_en.12" on page 264</a> |
| H0b.13    | 200b-0Eh              | Input reference counter                 | -2147483648p to 2147483647p          | 0       | p            | Unchangeable | <a href="#">"H0b_en.13" on page 265</a> |
| H0b.15    | 200b-10h              | Position following error (encoder unit) | -2147483648p to 2147483647p          | 0       | p            | Unchangeable | <a href="#">"H0b_en.15" on page 265</a> |
| H0b.17    | 200b-12h              | Feedback pulse counter                  | -2147483648p to 2147483647p          | 0       | p            | Unchangeable | <a href="#">"H0b_en.17" on page 265</a> |
| H0b.19    | 200b-14h              | Total power-on time                     | 0.0s–429496729.5s                    | 0.0     | s            | Unchangeable | <a href="#">"H0b_en.19" on page 266</a> |
| H0b.21    | 200b-16h              | Displayed AI1 voltage                   | -12.00 V–12.00 V                     | 0.00    | V            | Unchangeable | <a href="#">"H0b_en.21" on page 266</a> |
| H0b.22    | 200b-17h              | Displayed AI2 voltage                   | -12.00 V–12.00 V                     | 0.00    | V            | Unchangeable | <a href="#">"H0b_en.22" on page 266</a> |
| H0b.24    | 200b-19h              | Phase current RMS value                 | 0.0 A–6553.5 A                       | 0.0     | A            | Unchangeable | <a href="#">"H0b_en.24" on page 267</a> |



| Parameter | Communication Address | Name                                                        | Value                                                    | Default | Unit         | Change Mode  | Page                                    |
|-----------|-----------------------|-------------------------------------------------------------|----------------------------------------------------------|---------|--------------|--------------|-----------------------------------------|
| H0b.25    | 200b-1Ah              | Angle obtained upon voltage injection auto-tuning           | 0.0° to 360.0°                                           | 0.0     | °            | Unchangeable | <a href="#">"H0b_en.25" on page 267</a> |
| H0b.26    | 200b-1Bh              | Bus voltage                                                 | 0.0 V–6553.5 V                                           | 0.0     | V            | Unchangeable | <a href="#">"H0b_en.26" on page 267</a> |
| H0b.27    | 200b-1Ch              | Module temperature                                          | -20°C–200°C                                              | 0       | °C           | Unchangeable | <a href="#">"H0b_en.27" on page 268</a> |
| H0b.28    | 200b-1Dh              | Absolute encoder fault information given by FPGA            | 0–65535                                                  | 0       | -            | Unchangeable | <a href="#">"H0b_en.28" on page 268</a> |
| H0b.29    | 200b-1Eh              | Axis status information given by FPGA                       | 0–65535                                                  | 0       | -            | Unchangeable | <a href="#">"H0b_en.29" on page 268</a> |
| H0b.30    | 200b-1Fh              | Axis fault information given by FPGA                        | 0–65535                                                  | 0       | -            | Unchangeable | <a href="#">"H0b_en.30" on page 268</a> |
| H0b.31    | 200b-20h              | Encoder fault information                                   | 0–65535                                                  | 0       | -            | Unchangeable | <a href="#">"H0b_en.31" on page 269</a> |
| H0b.33    | 200b-22h              | Fault log                                                   | See <a href="#">"H0b_en.33" on page 269</a> for details. | 0       | -            | Real-time    | <a href="#">"H0b_en.33" on page 269</a> |
| H0b.34    | 200b-23h              | Fault code of the selected fault                            | 0–65535                                                  | 0       | -            | Unchangeable | <a href="#">"H0b_en.34" on page 270</a> |
| H0b.35    | 200b-24h              | Timestamp of the selected fault                             | 0.0s–429496729.5s                                        | 0.0     | s            | Unchangeable | <a href="#">"H0b_en.35" on page 270</a> |
| H0b.37    | 200b-26h              | Motor speed upon occurrence of the selected fault           | -32767[mm/s]/[rpm]–32767[mm/s]/[rpm]                     | 0       | [mm/s]/[rpm] | Unchangeable | <a href="#">"H0b_en.37" on page 270</a> |
| H0b.38    | 200b-27h              | Motor phase U current upon occurrence of the selected fault | -3276.7 A–3276.7 A                                       | 0.0     | A            | Unchangeable | <a href="#">"H0b_en.38" on page 270</a> |
| H0b.39    | 200b-28h              | Motor phase V current upon occurrence of the selected fault | -3276.7 A–3276.7 A                                       | 0.0     | A            | Unchangeable | <a href="#">"H0b_en.39" on page 271</a> |

| Parameter | Communication Address | Name                                                                                   | Value          | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|----------------------------------------------------------------------------------------|----------------|---------|------|--------------|-----------------------------------------|
| H0b.40    | 200b-29h              | Bus voltage upon occurrence of the selected fault                                      | 0.0 V–6553.5 V | 0.0     | V    | Unchangeable | <a href="#">"H0b_en.40" on page 271</a> |
| H0b.41    | 200b-2Ah              | Input terminal state on selected fault                                                 | 0–65535        | 0       | -    | Unchangeable | <a href="#">"H0b_en.41" on page 271</a> |
| H0b.43    | 200b-2Ch              | Output terminal status upon occurrence of the selected fault                           | 0–65535        | 0       | -    | Unchangeable | <a href="#">"H0b_en.43" on page 271</a> |
| H0b.45    | 200b-2Eh              | Internal fault code                                                                    | 0–65535        | 0       | -    | Unchangeable | <a href="#">"H0b_en.45" on page 272</a> |
| H0b.46    | 200b-2Fh              | Absolute encoder fault information given by FPGA upon occurrence of the selected fault | 0–65535        | 0       | -    | Unchangeable | <a href="#">"H0b_en.46" on page 272</a> |
| H0b.47    | 200b-30h              | System status information given by FPGA upon occurrence of the selected fault          | 0–65535        | 0       | -    | Unchangeable | <a href="#">"H0b_en.47" on page 272</a> |
| H0b.48    | 200b-31h              | System fault information given by FPGA upon occurrence of the selected fault           | 0–65535        | 0       | -    | Unchangeable | <a href="#">"H0b_en.48" on page 273</a> |
| H0b.49    | 200b-32h              | Encoder fault information upon occurrence of the selected fault                        | 0–65535        | 0       | -    | Unchangeable | <a href="#">"H0b_en.49" on page 273</a> |

| Parameter | Communication Address | Name                                                                  | Value                                                                                                                                                                                                                                                                            | Default | Unit           | Change Mode  | Page                                    |
|-----------|-----------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------|--------------|-----------------------------------------|
| H0b.51    | 200b-34h              | Internal fault code upon occurrence of the selected fault             | 0–65535                                                                                                                                                                                                                                                                          | 0       | -              | Unchangeable | <a href="#">"H0b_en.51" on page 273</a> |
| H0b.52    | 200b-35h              | FPGA timeout fault standard bit upon occurrence of the selected fault | 0–65535                                                                                                                                                                                                                                                                          | 0       | -              | Unchangeable | <a href="#">"H0b_en.52" on page 273</a> |
| H0b.53    | 200b-36h              | Position following error (reference unit)                             | -2147483648p to 2147483647p                                                                                                                                                                                                                                                      | 0       | p              | Unchangeable | <a href="#">"H0b_en.53" on page 274</a> |
| H0b.55    | 200b-38h              | Motor speed actual value                                              | -2147483648.0[mm/s]/[rpm]–2147483647.0[mm/s]/[rpm]                                                                                                                                                                                                                               | 0.0     | [mm/s]/[rpm]   | Unchangeable | <a href="#">"H0b_en.55" on page 274</a> |
| H0b.57    | 200b-3Ah              | Control circuit bus voltage                                           | 0.0 V–6553.5 V                                                                                                                                                                                                                                                                   | 0.0     | V              | Unchangeable | <a href="#">"H0b_en.57" on page 274</a> |
| H0b.58    | 200b-3Bh              | Mechanical absolute position (low 32 bits)                            | 0p to 4294967295p                                                                                                                                                                                                                                                                | 0       | p              | Unchangeable | <a href="#">"H0b_en.58" on page 275</a> |
| H0b.60    | 200b-3Dh              | Mechanical absolute position (high 32 bits)                           | -2147483648p to 2147483647p                                                                                                                                                                                                                                                      | 0       | p              | Unchangeable | <a href="#">"H0b_en.60" on page 275</a> |
| H0b.63    | 200b-40h              | NotRdy state                                                          | 0: Normal<br>1: Control circuit error<br>2: Main circuit power input error<br><br>3: Bus undervoltage<br>4: Soft start failed<br>5: Encoder initialization undone<br>6: Short circuit to ground failed<br>7: Others<br>9: Fully closed-loop encoder initialization not completed | 0       | -              | Unchangeable | <a href="#">"H0b_en.63" on page 275</a> |
| H0b.64    | 200b-41h              | Real-time input position reference counter                            | -2147483648 to 2147483647                                                                                                                                                                                                                                                        | 0       | Reference unit | Unchangeable | <a href="#">"H0b_en.64" on page 276</a> |

| Parameter | Communication Address | Name                                                     | Value                       | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|----------------------------------------------------------|-----------------------------|---------|------|--------------|-----------------------------------------|
| H0b.66    | 200b-43h              | Encoder temperature                                      | -32768°C–32767°C            | 0       | °C   | Unchangeable | <a href="#">"H0b_en.66" on page 276</a> |
| H0b.67    | 200b-44h              | Load rate of braking resistor                            | 0.0% to 200.0%              | 0.0     | %    | Unchangeable | <a href="#">"H0b_en.67" on page 276</a> |
| H0b.70    | 200b-47h              | Number of absolute encoder revolutions                   | -32768Rev to 32767Rev       | 0       | Rev  | Unchangeable | <a href="#">"H0b_en.70" on page 277</a> |
| H0b.71    | 200b-48h              | Single-turn position fed back by the absolute encoder    | 0p to 2147483647p           | 0       | p    | Unchangeable | <a href="#">"H0b_en.71" on page 277</a> |
| H0b.74    | 200b-4Bh              | System fault information given by FPGA                   | 0–65535                     | 0       | -    | Unchangeable | <a href="#">"H0b_en.74" on page 277</a> |
| H0b.77    | 200b-4Eh              | Encoder position (low 32 bits)                           | 0p to 4294967295p           | 0       | p    | Unchangeable | <a href="#">"H0b_en.77" on page 278</a> |
| H0b.79    | 200b-50h              | Encoder position (high 32 bits)                          | -2147483648p to 2147483647p | 0       | p    | Unchangeable | <a href="#">"H0b_en.79" on page 278</a> |
| H0b.81    | 200b-52h              | Single-turn position of the rotary load (low 32 bits)    | 0p to 4294967295p           | 0       | p    | Unchangeable | <a href="#">"H0b_en.81" on page 278</a> |
| H0b.83    | 200b-54h              | Single-turn position of the rotary load (high 32 bits)   | -2147483648p to 2147483647p | 0       | p    | Unchangeable | <a href="#">"H0b_en.83" on page 278</a> |
| H0b.85    | 200b-56h              | Single-turn position of the rotary load (reference unit) | 0p to 4294967295p           | 0       | p    | Unchangeable | <a href="#">"H0b_en.85" on page 279</a> |
| H0b.87    | 200b-58h              | IGBT junction temperature                                | 0–200                       | 0       | -    | Unchangeable | <a href="#">"H0b_en.87" on page 279</a> |
| H0b.90    | 200b-5Bh              | Group No. of the abnormal parameter                      | 0–65535                     | 0       | -    | Unchangeable | <a href="#">"H0b_en.90" on page 279</a> |
| H0b.91    | 200b-5Ch              | Offset within the group of the abnormal parameter        | 0–65535                     | 0       | -    | Unchangeable | <a href="#">"H0b_en.91" on page 280</a> |
| H0b.92    | 200b-5Dh              | Hall state                                               | 0–65535                     | 0       | -    | Unchangeable | <a href="#">"H0b_en.92" on page 280</a> |

| Parameter | Communication Address | Name                                                           | Value             | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|----------------------------------------------------------------|-------------------|---------|------|--------------|-----------------------------------------|
| H0b.94    | 200b-5Fh              | Individual power-on time                                       | 0.0s–429496729.5s | 0.0     | s    | Unchangeable | <a href="#">"H0b_en.94" on page 280</a> |
| H0b.96    | 200b-61h              | Individual power-on time upon occurrence of the selected fault | 0.0s–429496729.5s | 0.0     | s    | Unchangeable | <a href="#">"H0b_en.96" on page 280</a> |

### 1.13 H0C Fault and Protection Parameters 2

| Parameter | Communication Address | Name                             | Value      | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------|------------|---------|------|-------------|-----------------------------------------|
| H0C.53    | 200C-36h              | Probe DI ON compensation time 2  | -3000–3000 | 200     | 25ns | Real-time   | <a href="#">"H0C_en.53" on page 281</a> |
| H0C.54    | 200C-37h              | Probe DI OFF compensation time 2 | -3000–3000 | 1512    | 25ns | Real-time   | <a href="#">"H0C_en.54" on page 281</a> |
| H0C.71    | 200C-48h              | Internal function switch         | 0–65535    | 0       | -    | Real-time   | <a href="#">"H0C_en.71" on page 281</a> |

### 1.14 H0d Auxiliary Function Parameters

| Parameter | Communication Address | Name                       | Value                                                            | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------|------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H0d.00    | 200d-01h              | Software Reset             | 0: No operation<br>1: Enable                                     | 0       | -    | At stop     | <a href="#">"H0d_en.00" on page 282</a> |
| H0d.01    | 200d-02h              | Fault Reset                | 0: No operation<br>1: Enable                                     | 0       | -    | At stop     | <a href="#">"H0d_en.01" on page 282</a> |
| H0d.02    | 200d-03h              | Inertia auto-tuning enable | 0–65                                                             | 0       | -    | Real-time   | <a href="#">"H0d_en.02" on page 282</a> |
| H0d.04    | 200d-05h              | Read/write in encoder ROM  | 0: No operation<br>1: Write ROM<br>2: Read ROM<br>3: ROM failure | 0       | -    | At stop     | <a href="#">"H0d_en.04" on page 283</a> |
| H0d.05    | 200d-06h              | Emergency stop             | 0: No operation<br>1: Emergency stop                             | 0       | -    | Real-time   | <a href="#">"H0d_en.05" on page 283</a> |

| Parameter | Communication Address | Name                                                 | Value                                                                                                                                                                     | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H0d.06    | 200d-07h              | Current loop auto-tuning test                        | 0: No operation<br>1: Enable current loop auto-tuning<br>2: Enable current loop step test (static)<br>3: Enable current loop step test                                    | 0       | -    | At stop     | <a href="#">"H0d_en.06" on page 283</a> |
| H0d.10    | 200d-08h              | Analog channel auto adjusting                        | 0: No operation<br>1: Adjusted through AI1<br>2: Adjusted through AI2                                                                                                     | 0       | -    | At stop     | <a href="#">"H0d_en.10" on page 284</a> |
| H0d.12    | 200d-0Dh              | Phase U/V current balance correction                 | 0: Disabled<br>1: Enabled                                                                                                                                                 | 0       | -    | At stop     | <a href="#">"H0d_en.12" on page 284</a> |
| H0d.17    | 200d-12h              | Forced DI/DO enable switch                           | bit0: Forced DI enable switch<br>0: Disabled<br>1: Enabled<br>bit1: Forced DO enable switch<br>0: Disabled<br>1: Enabled                                                  | 0       | -    | Real-time   | <a href="#">"H0d_en.17" on page 284</a> |
| H0d.18    | 200d-13h              | Forced DI value                                      | 0–255                                                                                                                                                                     | 255     | -    | Real-time   | <a href="#">"H0d_en.18" on page 285</a> |
| H0d.19    | 200d-14h              | Forced DO value                                      | 0–31                                                                                                                                                                      | 0       | -    | Real-time   | <a href="#">"H0d_en.19" on page 285</a> |
| H0d.20    | 200d-15h              | Absolute encoder reset                               | 0: No operation<br>1: Reset fault<br>2: Reset fault and multi-turn data<br>3: Reset Inovance 2nd encoder fault<br>4: Reset Inovance 2nd encoder fault and multi-turn data | 0       | -    | At stop     | <a href="#">"H0d_en.20" on page 286</a> |
| H0d.21    | 200d-16h              | Read error status bit of Nikon and EnDat2.2 encoders | 0: No operation<br>1: Reading error status bit                                                                                                                            | 0       | -    | At stop     | <a href="#">"H0d_en.21" on page 286</a> |
| H0d.29    | 200d-1Eh              | Motor parameter auto-tuning                          | 0: No operation<br>1: Enabled                                                                                                                                             | 0       | -    | At stop     | <a href="#">"H0d_en.29" on page 286</a> |

## 1.15 H0E Communication Function Parameters

| Parameter | Communication Address | Name                                                 | Value                                                                                                                                                                                                                                                                                                             | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H0E.00    | 200E-01h              | Node address                                         | 1–127                                                                                                                                                                                                                                                                                                             | 1       | -    | At stop     | <a href="#">"H0E_en.00" on page 287</a> |
| H0E.01    | 200E-02h              | Save objects written through communication to e2prom | 0: Not save<br>1: Save parameters written through communication to e2prom<br>2: Save object dictionaries written through communication to e2prom<br>3: Save parameters and object dictionaries written through communication to e2prom<br>4: Save object dictionaries written before communication (OP) to e2prom | 1       | -    | Real-time   | <a href="#">"H0E_en.01" on page 287</a> |
| H0E.07    | 200E-08h              | Object dictionary unit selection                     | 0: Reference unit system (p/s, p/s <sup>2</sup> )<br>1: User unit system (0.01 [mm/s]/[rpm], ms)                                                                                                                                                                                                                  | 0       | -    | At stop     | <a href="#">"H0E_en.07" on page 287</a> |
| H0E.10    | 200E-0Bh              | CAN selection                                        | 0: Pulse/Axis control command<br>1: Enhanced axis control command<br>2: CANopen                                                                                                                                                                                                                                   | 0       | -    | At stop     | <a href="#">"H0E_en.10" on page 288</a> |
| H0E.11    | 200E-0Ch              | CAN baud rate                                        | 0: 20 kbps<br>1: 50 kbps<br>2: 100 kbps<br>3: 125 kbps<br>4: 250 kbps<br>5: 500 kbps<br>6: 1 Mbps<br>1 Mbps - non-standard                                                                                                                                                                                        | 5       | -    | At stop     | <a href="#">"H0E_en.11" on page 288</a> |
| H0E.12    | 200E-0Dh              | Excessive IP position command increment count        | 1–30                                                                                                                                                                                                                                                                                                              | 20      | -    | Real-time   | <a href="#">"H0E_en.12" on page 289</a> |
| H0E.13    | 200E-0Eh              | CANopen sync period error limit                      | 0: 1/4<br>1: 1/2<br>2: 3/4<br>3: 1<br>4: 2<br>5: Disabled                                                                                                                                                                                                                                                         | 0       | -    | Real-time   | <a href="#">"H0E_en.13" on page 289</a> |

| Parameter | Communication Address | Name                                                        | Value                                                                                                                                                 | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|--------------|-----------------------------------------|
| H0E.14    | 200E-0Fh              | CANopen communication state                                 | 0–9                                                                                                                                                   | 0       | -    | Unchangeable | <a href="#">"H0E_en.14" on page 289</a> |
| H0E.17    | 200E-12h              | Get the count of received NMT frames with incorrect length  | 0–65535                                                                                                                                               | 0       | -    | Unchangeable | <a href="#">"H0E_en.17" on page 290</a> |
| H0E.18    | 200E-13h              | Get the count of received NMT frames with incorrect command | 0–65535                                                                                                                                               | 0       | -    | Unchangeable | <a href="#">"H0E_en.18" on page 290</a> |
| H0E.19    | 200E-14h              | Get received heartbeat frames of wrong length               | 0–65535                                                                                                                                               | 0       | -    | Unchangeable | <a href="#">"H0E_en.19" on page 290</a> |
| H0E.80    | 200E-51h              | Modbus baud rate                                            | 0: 300 bps<br>1: 600 bps<br>2: 1200 bps<br>3: 2400 bps<br>4: 4800 bps<br>5: 9600 bps<br>6: 19200 bps<br>7: 38400 bps<br>8: 57600 bps<br>9: 115200 bps | 9       | -    | Real-time    | <a href="#">"H0E_en.80" on page 290</a> |
| H0E.81    | 200E-52h              | Modbus data format                                          | 0: No parity, 2 stop bits (N-2)<br>1: Even parity, 1 stop bit (E-1)<br>2: Odd parity, 1 stop bit (O-1)<br>3: No parity, 1 stop bit (N-1)              | 3       | -    | Real-time    | <a href="#">"H0E_en.81" on page 291</a> |
| H0E.82    | 200E-53h              | Modbus response delay                                       | 0 ms–20 ms                                                                                                                                            | 0       | ms   | Real-time    | <a href="#">"H0E_en.82" on page 291</a> |
| H0E.83    | 200E-54h              | Modbus communication timeout                                | 0 ms–600 ms                                                                                                                                           | 0       | ms   | Real-time    | <a href="#">"H0E_en.83" on page 292</a> |
| H0E.84    | 200E-55h              | Sequence of Modbus communication data bits                  | 0: High bits before low bits<br>1: Low bits before high bits                                                                                          | 1       | -    | Real-time    | <a href="#">"H0E_en.84" on page 292</a> |
| H0E.90    | 200E-5Bh              | Communication version                                       | 0.00–655.35                                                                                                                                           | 0.00    | -    | Unchangeable | <a href="#">"H0E_en.90" on page 292</a> |



| Parameter | Communication Address | Name                                 | Value   | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|--------------------------------------|---------|---------|------|-------------|-----------------------------------------|
| H0E.97    | 200E-62h              | Communication monitoring parameter 1 | 0–65535 | 0       | -    | Real-time   | <a href="#">"H0E_en.97" on page 293</a> |
| H0E.98    | 200E-63h              | Communication monitoring parameter 2 | 0–65535 | 0       | -    | Real-time   | <a href="#">"H0E_en.98" on page 293</a> |

## 1.16 H0F Fully Closed-loop Parameters

| Parameter | Communication Address | Name                                                      | Value                                                                                          | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H0F.00    | 200F-01h              | Encoder feedback mode                                     | 0: Internal encoder feedback<br>1: External encoder feedback<br>2: Inner/Outer loop switchover | 0       | -    | Real-time   | <a href="#">"H0F_en.00" on page 293</a> |
| H0F.01    | 200F-02h              | Fully closed-loop encoder application mode                | 0: Standard operating direction<br>1: Reverse operating direction                              | 0       | -    | Real-time   | <a href="#">"H0F_en.01" on page 294</a> |
| H0F.02    | 200F-03h              | Fully closed-loop encoder absolute value                  | 0: Incremental mode<br>1: Absolute linear mode                                                 | 0       | -    | At stop     | <a href="#">"H0F_en.02" on page 294</a> |
| H0F.03    | 200F-04h              | Fully closed-loop encoder feedback type                   | 0: Quadrature pulse<br>1: Inovance<br>2: BiSS-C<br>3: ENDAT2.2<br>4: SSI                       | 0       | -    | At stop     | <a href="#">"H0F_en.03" on page 295</a> |
| H0F.04    | 200F-05h              | Number of fully closed-loop encoder pulses per revolution | 1–2147483647                                                                                   | 10000   | -    | At stop     | <a href="#">"H0F_en.04" on page 295</a> |
| H0F.06    | 200F-07h              | Fully closed-loop encoder interface                       | 0: CN2<br>1: CN7                                                                               | 1       | -    | At stop     | <a href="#">"H0F_en.06" on page 296</a> |
| H0F.08    | 200F-09h              | Excessive deviation threshold in compound control mode    | 0–2147483647                                                                                   | 1000    | -    | Real-time   | <a href="#">"H0F_en.08" on page 296</a> |
| H0F.10    | 200F-0Bh              | Clear deviation in compound control mode                  | 0Rev to 100Rev                                                                                 | 1       | Rev  | Real-time   | <a href="#">"H0F_en.10" on page 297</a> |

| Parameter | Communication Address | Name                                                                 | Value                                              | Default | Unit         | Change Mode  | Page                                    |
|-----------|-----------------------|----------------------------------------------------------------------|----------------------------------------------------|---------|--------------|--------------|-----------------------------------------|
| H0F.13    | 200F-0Eh              | Compound vibration suppression filter time                           | 0.0 ms to 6553.5 ms                                | 0.0     | ms           | At stop      | <a href="#">"H0F_en.13" on page 297</a> |
| H0F.16    | 200F-11h              | Pulse deviation display in compound control mode                     | -2147483648 to 2147483647                          | 0       | Encoder unit | Unchangeable | <a href="#">"H0F_en.16" on page 297</a> |
| H0F.18    | 200F-13h              | Internal position pulse feedback display                             | -2147483648 to 2147483647                          | 0       | Encoder unit | Unchangeable | <a href="#">"H0F_en.18" on page 298</a> |
| H0F.20    | 200F-15h              | Fully closed-loop encoder position pulse feedback display            | -2147483648 to 2147483647                          | 0       | Encoder unit | Unchangeable | <a href="#">"H0F_en.20" on page 298</a> |
| H0F.22    | 200F-17h              | Quadrature pulse phase Z detection invalid in fully closed-loop mode | 0: Detected<br>1: Not detected                     | 0       | -            | Real-time    | <a href="#">"H0F_en.22" on page 298</a> |
| H0F.23    | 200F-18h              | BISS/SSI/EDNAT2.2 full closed-loop encoder absolute homing offset    | -2147483648–2147483647                             | 0       | -            | Real-time    | <a href="#">"H0F_en.23" on page 299</a> |
| H0F.25    | 200F-1Ah              | Set the source of touch probe Z signal in fully closed-loop mode.    | 0: Motor Z signal<br>1: External feedback Z signal | 0       | -            | Real-time    | <a href="#">"H0F_en.25" on page 299</a> |
| H0F.26    | 200F-1Bh              | BISS/SSI/EDNAT2.2 full closed-loop encoder absolute feedback offset  | -2147483648–2147483647                             | 0       | -            | Real-time    | <a href="#">"H0F_en.26" on page 299</a> |
| H0F.28    | 200F-1Dh              | Index value of BiSS/SSI communication alarm                          | 0–65535                                            | 0       | -            | Unchangeable | <a href="#">"H0F_en.28" on page 300</a> |

| Parameter | Communication Address | Name                                                                                               | Value                      | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|----------------------------------------------------------------------------------------------------|----------------------------|---------|------|--------------|-----------------------------------------|
| H0F.29    | 200F-1Eh              | CRC of BiSS-C/SSI fully closed-loop encoder feedback                                               | 0: Positive<br>1: Negative | 1       | -    | Real-time    | <a href="#">"H0F_en.29" on page 300</a> |
| H0F.30    | 200F-1Fh              | BiSS-C/SSI/EDNAT2.2 valid bits of encoder communication position feedback in full closed-loop mode | 0–127                      | 29      | -    | At stop      | <a href="#">"H0F_en.30" on page 300</a> |
| H0F.31    | 200F-20h              | Valid bit of BiSS-C/SSI encoder communication alarm index in full closed-loop mode                 | 0–31                       | 2       | -    | At stop      | <a href="#">"H0F_en.31" on page 301</a> |
| H0F.32    | 200F-21h              | BiSS-C/SSI/ENDAT encoder communication frequency in fully closed-loop mode                         | 0 kHz–10000 kHz            | 2000    | kHz  | Real-time    | <a href="#">"H0F_en.32" on page 302</a> |
| H0F.33    | 200F-22h              | SSI/ENDAT encoder recovery time in fully closed-loop mode                                          | 0.000us to 40.000us        | 0.500   | us   | Real-time    | <a href="#">"H0F_en.33" on page 302</a> |
| H0F.35    | 200F-24h              | BiSS-C error detection enable in fully closed-loop mode                                            | 0: Disabled<br>1: Enabled  | 0       | -    | At stop      | <a href="#">"H0F_en.35" on page 302</a> |
| H0F.36    | 200F-25h              | BiSS-C error bit polarity in fully closed-loop mode                                                | 0: Positive<br>1: Negative | 0       | -    | At stop      | <a href="#">"H0F_en.36" on page 302</a> |
| H0F.40    | 200F-29h              | Communication error register in full closed-loop mode                                              | 0–65535                    | 0       | -    | Unchangeable | <a href="#">"H0F_en.40" on page 303</a> |

| Parameter | Communication Address | Name                                                                             | Value                                                                                      | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------|------|--------------|-----------------------------------------|
| H0F.41    | 200F-2Ah              | Inovance fully closed-loop encoder version                                       | 0.0–6553.5                                                                                 | 0.0     | -    | Unchangeable | <a href="#">"H0F_en.41" on page 305</a> |
| H0F.42    | 200F-2Bh              | Inovance fully closed-loop encoder resolution                                    | 0–4294967295                                                                               | 0       | -    | Unchangeable | <a href="#">"H0F_en.42" on page 305</a> |
| H0F.45    | 200F-2Eh              | Positioning completed/<br>Position deviation threshold in fully closed-loop mode | 0: Threshold scaled to outer loop unit<br>1: Same threshold used for inner and outer loops | 0       | -    | At stop      | <a href="#">"H0F_en.45" on page 305</a> |
| H0F.46    | 200F-2Fh              | Fully closed-loop speed feedback selection                                       | 0: Internal encoder feedback<br>1: External encoder feedback                               | 0       | -    | At stop      | <a href="#">"H0F_en.46" on page 306</a> |
| H0F.51    | 200F-34h              | SSI encoder check bit selection in fully closed-loop mode                        | 0: No check<br>1: Check applied                                                            | 1       | -    | At stop      | <a href="#">"H0F_en.51" on page 306</a> |
| H0F.52    | 200F-35h              | SSI encoder code system in full closed-loop mode                                 | 0: Binary<br>1: Gray code                                                                  | 1       | -    | At stop      | <a href="#">"H0F_en.52" on page 306</a> |
| H0F.53    | 200F-36h              | SSI state word code system in fully closed-loop mode                             | 0: Binary<br>1: Gray code                                                                  | 1       | -    | At stop      | <a href="#">"H0F_en.53" on page 307</a> |
| H0F.54    | 200F-37h              | SSI encoder parity check in fully closed-loop mode                               | 0: Disabled<br>1: Enabled                                                                  | 0       | -    | At stop      | <a href="#">"H0F_en.54" on page 307</a> |
| H0F.55    | 200F-38h              | Fully closed-loop encoder communication timeout error count                      | 0–65535                                                                                    | 0       | -    | Unchangeable | <a href="#">"H0F_en.55" on page 307</a> |

| Parameter | Communication Address | Name                                                                | Value   | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|---------------------------------------------------------------------|---------|---------|------|--------------|-----------------------------------------|
| H0F.56    | 200F-39h              | Encoder CRC error count in fully closed-loop mode                   | 0–65535 | 0       | -    | Unchangeable | <a href="#">"H0F_en.56" on page 307</a> |
| H0F.57    | 200F-3Ah              | Fully closed-loop encoder communication frame stop bit error count. | 0–65535 | 0       | -    | Unchangeable | <a href="#">"H0F_en.57" on page 308</a> |

## 1.17 H11 Multi-Position Parameters

| Parameter | Communication Address | Name                                                     | Value                                                                                                                                                                                                                                         | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H11.00    | 2011-01h              | Multi-position running mode                              | 0: Single run (number of displacements selected in H11.01)<br>1: Cyclic operation (number of displacement selected in H11.01)<br>2: DI-based operation (selected by DI)<br>3: Sequential operation<br>5: Axis-controlled continuous operation | 1       | -    | At stop     | <a href="#">"H11_en.00" on page 308</a> |
| H11.01    | 2011-02h              | Number of displacement references in multi-position mode | 1–16                                                                                                                                                                                                                                          | 1       | -    | At stop     | <a href="#">"H11_en.01" on page 312</a> |
| H11.02    | 2011-03h              | Starting displacement No. after pause                    | 0: Continue to execute the unexecuted displacements<br>1: Start from displacement 1                                                                                                                                                           | 0       | -    | At stop     | <a href="#">"H11_en.02" on page 312</a> |
| H11.03    | 2011-04h              | Interval time unit                                       | 0: ms<br>1: s                                                                                                                                                                                                                                 | 0       | -    | At stop     | <a href="#">"H11_en.03" on page 313</a> |
| H11.04    | 2011-05h              | Displacement reference type                              | 0: Relative displacement reference<br>1: Absolute displacement reference                                                                                                                                                                      | 0       | -    | Real-time   | <a href="#">"H11_en.04" on page 313</a> |
| H11.05    | 2011-06h              | Starting displacement No. in sequential operation        | 0–16                                                                                                                                                                                                                                          | 0       | -    | At stop     | <a href="#">"H11_en.05" on page 314</a> |

| Parameter | Communication Address | Name                               | Value                           | Default | Unit           | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------|---------------------------------|---------|----------------|-------------|-----------------------------------------|
| H11.09    | 2011-0Ah              | Deceleration upon axis control OFF | 0 ms to 65535 ms                | 65535   | ms             | Real-time   | <a href="#">"H11_en.09" on page 314</a> |
| H11.10    | 2011-0Bh              | Starting speed of displacement 1   | 0[mm/s]/[rpm]–6000[mm/s]/[rpm]  | 0       | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.10" on page 314</a> |
| H11.11    | 2011-0Ch              | Stop speed of displacement 1       | 0[mm/s]/[rpm]–6000[mm/s]/[rpm]  | 0       | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.11" on page 315</a> |
| H11.12    | 2011-0Dh              | Displacement 1                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.12" on page 315</a> |
| H11.14    | 2011-0Fh              | Max. speed of displacement 1       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.14" on page 315</a> |
| H11.15    | 2011-10h              | Acc/Dec time of displacement 1     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.15" on page 316</a> |
| H11.16    | 2011-11h              | Interval time after displacement 1 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.16" on page 316</a> |
| H11.17    | 2011-12h              | Displacement 2                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.17" on page 317</a> |
| H11.19    | 2011-14h              | Max. speed of displacement 2       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.19" on page 317</a> |
| H11.20    | 2011-15h              | Acc/Dec time of displacement 2     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.20" on page 317</a> |
| H11.21    | 2011-16h              | Interval time after displacement 2 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.21" on page 317</a> |
| H11.22    | 2011-17h              | Displacement 3                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.22" on page 318</a> |
| H11.24    | 2011-19h              | Max. speed of displacement 3       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.24" on page 318</a> |
| H11.25    | 2011-1Ah              | Acc/Dec time of displacement 3     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.25" on page 318</a> |
| H11.26    | 2011-1Bh              | Interval time after displacement 3 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.26" on page 318</a> |
| H11.27    | 2011-1Ch              | Displacement 4                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.27" on page 319</a> |

| Parameter | Communication Address | Name                               | Value                           | Default | Unit           | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------|---------------------------------|---------|----------------|-------------|-----------------------------------------|
| H11.29    | 2011-1Eh              | Max. speed of displacement 4       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.29" on page 319</a> |
| H11.30    | 2011-1Fh              | Acc/Dec time of displacement 4     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.30" on page 319</a> |
| H11.31    | 2011-20h              | Interval time after displacement 4 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.31" on page 320</a> |
| H11.32    | 2011-21h              | Displacement 5                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.32" on page 320</a> |
| H11.34    | 2011-23h              | Max. speed of displacement 5       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.34" on page 320</a> |
| H11.35    | 2011-24h              | Acc/Dec time of displacement 5     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.35" on page 320</a> |
| H11.36    | 2011-25h              | Interval time after displacement 5 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.36" on page 321</a> |
| H11.37    | 2011-26h              | Displacement 6                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.37" on page 321</a> |
| H11.39    | 2011-28h              | Max. speed of displacement 6       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.39" on page 321</a> |
| H11.40    | 2011-29h              | Acc/Dec time of displacement 6     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.40" on page 321</a> |
| H11.41    | 2011-2Ah              | Interval time after displacement 6 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.41" on page 322</a> |
| H11.42    | 2011-2Bh              | Displacement 7                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.42" on page 322</a> |
| H11.44    | 2011-2Dh              | Max. speed of displacement 7       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.44" on page 322</a> |
| H11.45    | 2011-2Eh              | Acc/Dec time of displacement 7     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.45" on page 323</a> |
| H11.46    | 2011-2Fh              | Interval time after displacement 7 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.46" on page 323</a> |
| H11.47    | 2011-30h              | Displacement 8                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.47" on page 323</a> |

| Parameter | Communication Address | Name                                | Value                           | Default | Unit           | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------|---------------------------------|---------|----------------|-------------|-----------------------------------------|
| H11.49    | 2011-32h              | Max. speed of displacement 8        | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.49" on page 323</a> |
| H11.50    | 2011-33h              | Acc/Dec time of displacement 8      | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.50" on page 324</a> |
| H11.51    | 2011-34h              | Interval time after displacement 8  | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.51" on page 324</a> |
| H11.52    | 2011-35h              | Displacement 9                      | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.52" on page 324</a> |
| H11.54    | 2011-37h              | Max. speed of displacement 9        | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.54" on page 324</a> |
| H11.55    | 2011-38h              | Acc/Dec time of displacement 9      | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.55" on page 325</a> |
| H11.56    | 2011-39h              | Interval time after displacement 9  | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.56" on page 325</a> |
| H11.57    | 2011-3Ah              | Displacement 10                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.57" on page 325</a> |
| H11.59    | 2011-3Ch              | Max. speed of displacement 10       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.59" on page 326</a> |
| H11.60    | 2011-3Dh              | Acc/Dec time of displacement 10     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.60" on page 326</a> |
| H11.61    | 2011-3Eh              | Interval time after displacement 10 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.61" on page 326</a> |
| H11.62    | 2011-3Fh              | Displacement 11                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.62" on page 326</a> |
| H11.64    | 2011-41h              | Max. speed of displacement 11       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.64" on page 327</a> |
| H11.65    | 2011-42h              | Acc/Dec time of displacement 11     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.65" on page 327</a> |
| H11.66    | 2011-43h              | Interval time after displacement 11 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.66" on page 327</a> |



| Parameter | Communication Address | Name                                | Value                           | Default | Unit           | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------|---------------------------------|---------|----------------|-------------|-----------------------------------------|
| H11.67    | 2011-44h              | Displacement 12                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.67" on page 327</a> |
| H11.69    | 2011-46h              | Max. speed of displacement 12       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.69" on page 328</a> |
| H11.70    | 2011-47h              | Acc/Dec time of displacement 12     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.70" on page 328</a> |
| H11.71    | 2011-48h              | Interval time after displacement 12 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.71" on page 328</a> |
| H11.72    | 2011-49h              | Displacement 13                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.72" on page 329</a> |
| H11.74    | 2011-4Bh              | Max. speed of displacement 13       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.74" on page 329</a> |
| H11.75    | 2011-4Ch              | Acc/Dec time of displacement 13     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.75" on page 329</a> |
| H11.76    | 2011-4Dh              | Interval time after displacement 13 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.76" on page 329</a> |
| H11.77    | 2011-4Eh              | Displacement 14                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.77" on page 330</a> |
| H11.79    | 2011-50h              | Max. speed of displacement 14       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.79" on page 330</a> |
| H11.80    | 2011-51h              | Acc/Dec time of displacement 14     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.80" on page 330</a> |
| H11.81    | 2011-52h              | Interval time after displacement 14 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.81" on page 330</a> |
| H11.82    | 2011-53h              | Displacement 15                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.82" on page 331</a> |
| H11.84    | 2011-55h              | Max. speed of displacement 15       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.84" on page 331</a> |

| Parameter | Communication Address | Name                                | Value                           | Default | Unit           | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------|---------------------------------|---------|----------------|-------------|-----------------------------------------|
| H11.85    | 2011-56h              | Acc/Dec time of displacement 15     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.85" on page 331</a> |
| H11.86    | 2011-57h              | Interval time after displacement 15 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.86" on page 332</a> |
| H11.87    | 2011-58h              | Displacement 16                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.87" on page 332</a> |
| H11.89    | 2011-5Ah              | Max. speed of displacement 16       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.89" on page 332</a> |
| H11.90    | 2011-5Bh              | Acc/Dec time of displacement 16     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.90" on page 332</a> |
| H11.91    | 2011-5Ch              | Interval time after displacement 16 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.91" on page 333</a> |

## 1.18 H12 Multi-Speed Parameters

| Parameter | Communication Address | Name                                           | Value                                                                                                                                               | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H12.00    | 2012-01h              | Multi-speed operation mode                     | 0: Individual operation (number of speeds selected in H12.01)<br>1: Cyclic operation (number of speeds selected in H12.01)<br>2: DI-based operation | 1       | -    | At stop     | <a href="#">"H12_en.00" on page 333</a> |
| H12.01    | 2012-02h              | Number of speed references in multi-speed mode | 1–16                                                                                                                                                | 16      | -    | At stop     | <a href="#">"H12_en.01" on page 334</a> |
| H12.02    | 2012-03h              | Operating time unit                            | 0: s<br>1: min                                                                                                                                      | 0       | -    | At stop     | <a href="#">"H12_en.02" on page 335</a> |
| H12.03    | 2012-04h              | Acceleration time 1                            | 0 ms to 65535 ms                                                                                                                                    | 10      | ms   | Real-time   | <a href="#">"H12_en.03" on page 335</a> |
| H12.04    | 2012-05h              | Deceleration time 1                            | 0 ms to 65535 ms                                                                                                                                    | 10      | ms   | Real-time   | <a href="#">"H12_en.04" on page 336</a> |

| Parameter | Communication Address | Name                                                                                                                                                                                                                             | Value                                | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H12.05    | 2012-06h              | Acceleration time 2                                                                                                                                                                                                              | 0 ms to 65535 ms                     | 50      | ms           | Real-time   | <a href="#">"H12_en.05" on page 336</a> |
| H12.06    | 2012-07h              | Deceleration time 2                                                                                                                                                                                                              | 0 ms to 65535 ms                     | 50      | ms           | Real-time   | <a href="#">"H12_en.06" on page 336</a> |
| H12.07    | 2012-08h              | Acceleration time 3                                                                                                                                                                                                              | 0 ms to 65535 ms                     | 100     | ms           | Real-time   | <a href="#">"H12_en.07" on page 337</a> |
| H12.08    | 2012-09h              | Deceleration time 3                                                                                                                                                                                                              | 0 ms to 65535 ms                     | 100     | ms           | Real-time   | <a href="#">"H12_en.08" on page 337</a> |
| H12.09    | 2012-0Ah              | Acceleration time 4                                                                                                                                                                                                              | 0 ms to 65535 ms                     | 150     | ms           | Real-time   | <a href="#">"H12_en.09" on page 337</a> |
| H12.10    | 2012-0Bh              | Deceleration time 4                                                                                                                                                                                                              | 0 ms to 65535 ms                     | 150     | ms           | Real-time   | <a href="#">"H12_en.10" on page 338</a> |
| H12.20    | 2012-15h              | 1st speed reference                                                                                                                                                                                                              | -10000[mm/s]/[rpm]–10000[mm/s]/[rpm] | 0       | [mm/s]/[rpm] | Real-time   | <a href="#">"H12_en.20" on page 338</a> |
| H12.21    | 2012-16h              | Operating time of speed 1                                                                                                                                                                                                        | 0.0s(m) to 6553.5s(m)                | 5.0     | s (m)        | Real-time   | <a href="#">"H12_en.21" on page 338</a> |
| H12.22    | 2012-17h              | Acc./dec. time of speed 1<br>0: Zero acceleration/ deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4 |                                      | 256     | -            | Real-time   | <a href="#">"H12_en.22" on page 339</a> |
| H12.23    | 2012-18h              | Reference 2                                                                                                                                                                                                                      | -10000[mm/s]/[rpm]–10000[mm/s]/[rpm] | 100     | [mm/s]/[rpm] | Real-time   | <a href="#">"H12_en.23" on page 339</a> |
| H12.24    | 2012-19h              | Operating time of speed 2                                                                                                                                                                                                        | 0.0s(m) to 6553.5s(m)                | 5.0     | s (m)        | Real-time   | <a href="#">"H12_en.24" on page 340</a> |
| H12.25    | 2012-1Ah              | Acc./dec. time of speed 2<br>0: Zero acceleration/ deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4 |                                      | 256     | -            | Real-time   | <a href="#">"H12_en.25" on page 340</a> |
| H12.26    | 2012-1Bh              | Reference 3                                                                                                                                                                                                                      | -10000[mm/s]/[rpm]–10000[mm/s]/[rpm] | 300     | [mm/s]/[rpm] | Real-time   | <a href="#">"H12_en.26" on page 340</a> |

| Parameter | Communication Address | Name                      | Value                                                                                                                                                                                                  | Default | Unit             | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------------|-------------|-----------------------------------------|
| H12.27    | 2012-1Ch              | Operating time of speed 3 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                  | 5.0     | s (m)            | Real-time   | <a href="#">"H12_en.27" on page 341</a> |
| H12.28    | 2012-1Dh              | Acc./dec. time of speed 3 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4 | 256     | -                | Real-time   | <a href="#">"H12_en.28" on page 341</a> |
| H12.29    | 2012-1Eh              | Reference 4               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                               | 500     | [mm/s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.29" on page 341</a> |
| H12.30    | 2012-1Fh              | Operating time of speed 4 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                  | 5.0     | s (m)            | Real-time   | <a href="#">"H12_en.30" on page 342</a> |
| H12.31    | 2012-20h              | Acc./dec. time of speed 4 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4 | 256     | -                | Real-time   | <a href="#">"H12_en.31" on page 342</a> |
| H12.32    | 2012-21h              | Reference 5               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                               | 700     | [mm/s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.32" on page 342</a> |
| H12.33    | 2012-22h              | Operating time of speed 5 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                  | 5.0     | s (m)            | Real-time   | <a href="#">"H12_en.33" on page 342</a> |
| H12.34    | 2012-23h              | Acc./dec. time of speed 5 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4 | 256     | -                | Real-time   | <a href="#">"H12_en.34" on page 343</a> |
| H12.35    | 2012-24h              | Reference 6               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                               | 900     | [mm/s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.35" on page 343</a> |

| Parameter | Communication Address | Name                      | Value                                                                                                                                                                                                  | Default | Unit             | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------------|-------------|-----------------------------------------|
| H12.36    | 2012-25h              | Operating time of speed 6 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                  | 5.0     | s (m)            | Real-time   | <a href="#">"H12_en.36" on page 343</a> |
| H12.37    | 2012-26h              | Acc./dec. time of speed 6 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4 | 256     | -                | Real-time   | <a href="#">"H12_en.37" on page 344</a> |
| H12.38    | 2012-27h              | Reference 7               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                               | 600     | [mm/s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.38" on page 344</a> |
| H12.39    | 2012-28h              | Operating time of speed 7 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                  | 5.0     | s (m)            | Real-time   | <a href="#">"H12_en.39" on page 344</a> |
| H12.40    | 2012-29h              | Acc./dec. time of speed 7 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4 | 256     | -                | Real-time   | <a href="#">"H12_en.40" on page 345</a> |
| H12.41    | 2012-2Ah              | Reference 8               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                               | 300     | [mm/s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.41" on page 345</a> |
| H12.42    | 2012-2Bh              | Operating time of speed 8 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                  | 5.0     | s (m)            | Real-time   | <a href="#">"H12_en.42" on page 345</a> |
| H12.43    | 2012-2Ch              | Acc./dec. time of speed 8 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4 | 256     | -                | Real-time   | <a href="#">"H12_en.43" on page 345</a> |
| H12.44    | 2012-2Dh              | Reference 9               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                               | 100     | [mm/s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.44" on page 346</a> |

| Parameter | Communication Address | Name                       | Value                                                                                                                                                                                                  | Default | Unit             | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------------|-------------|-----------------------------------------|
| H12.45    | 2012-2Eh              | Operating time of speed 9  | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                  | 5.0     | s (m)            | Real-time   | <a href="#">"H12_en.45" on page 346</a> |
| H12.46    | 2012-2Fh              | Acc./dec. time of speed 9  | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4 | 256     | -                | Real-time   | <a href="#">"H12_en.46" on page 346</a> |
| H12.47    | 2012-30h              | Reference 10               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                               | -100    | [mm/s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.47" on page 347</a> |
| H12.48    | 2012-31h              | Operating time of speed 10 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                  | 5.0     | s (m)            | Real-time   | <a href="#">"H12_en.48" on page 347</a> |
| H12.49    | 2012-32h              | Acc./dec. time of speed 10 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4 | 256     | -                | Real-time   | <a href="#">"H12_en.49" on page 347</a> |
| H12.50    | 2012-33h              | Reference 11               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                               | -300    | [mm/s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.50" on page 348</a> |
| H12.51    | 2012-34h              | Operating time of speed 11 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                  | 5.0     | s (m)            | Real-time   | <a href="#">"H12_en.51" on page 348</a> |
| H12.52    | 2012-35h              | Acc./dec. time of speed 11 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4 | 256     | -                | Real-time   | <a href="#">"H12_en.52" on page 348</a> |
| H12.53    | 2012-36h              | Reference 12               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                               | -500    | [mm/s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.53" on page 349</a> |

| Parameter | Communication Address | Name                       | Value                                                                                                                                                                                                  | Default | Unit             | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------------|-------------|-----------------------------------------|
| H12.54    | 2012-37h              | Operating time of speed 12 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                  | 5.0     | s (m)            | Real-time   | <a href="#">"H12_en.54" on page 349</a> |
| H12.55    | 2012-38h              | Acc./dec. time of speed 12 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4 | 256     | -                | Real-time   | <a href="#">"H12_en.55" on page 349</a> |
| H12.56    | 2012-39h              | Reference 13               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                               | -700    | [mm/s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.56" on page 349</a> |
| H12.57    | 2012-3Ah              | Operating time of speed 13 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                  | 5.0     | s (m)            | Real-time   | <a href="#">"H12_en.57" on page 350</a> |
| H12.58    | 2012-3Bh              | Acc./dec. time of speed 13 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4 | 256     | -                | Real-time   | <a href="#">"H12_en.58" on page 350</a> |
| H12.59    | 2012-3Ch              | Reference 14               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                               | -900    | [mm/s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.59" on page 350</a> |
| H12.60    | 2012-3Dh              | Operating time of speed 14 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                  | 5.0     | s (m)            | Real-time   | <a href="#">"H12_en.60" on page 351</a> |
| H12.61    | 2012-3Eh              | Acc./dec. time of speed 14 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4 | 256     | -                | Real-time   | <a href="#">"H12_en.61" on page 351</a> |
| H12.62    | 2012-3Fh              | Reference 15               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                               | -600    | [mm/s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.62" on page 351</a> |

| Parameter | Communication Address | Name                       | Value                                                                                                                                                                                                  | Default | Unit             | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------------------|-------------|-----------------------------------------|
| H12.63    | 2012-40h              | Operating time of speed 15 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                  | 5.0     | s (m)            | Real-time   | <a href="#">"H12_en.63" on page 352</a> |
| H12.64    | 2012-41h              | Acc./dec. time of speed 15 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4 | 256     | -                | Real-time   | <a href="#">"H12_en.64" on page 352</a> |
| H12.65    | 2012-42h              | Reference 16               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                               | -300    | [mm/s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.65" on page 352</a> |
| H12.66    | 2012-43h              | Operating time of speed 16 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                  | 5.0     | s (m)            | Real-time   | <a href="#">"H12_en.66" on page 352</a> |
| H12.67    | 2012-44h              | Acc./dec. time of speed 16 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4 | 256     | -                | Real-time   | <a href="#">"H12_en.67" on page 353</a> |

## 1.19 H14 Gantry Synchronization Parameters

| Parameter | Communication Address | Name                                 | Value                                | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|--------------------------------------|--------------------------------------|---------|------|--------------|-----------------------------------------|
| H14.00    | 2014-01h              | Gantry communication state           | 0–1                                  | 0       | -    | Unchangeable | <a href="#">"H14_en.00" on page 353</a> |
| H14.01    | 2014-02h              | Gantry alignment state               | 0–1                                  | 0       | -    | Unchangeable | <a href="#">"H14_en.01" on page 353</a> |
| H14.02    | 2014-03h              | Gantry function selection            | 0: None<br>1: Gantry synchronization | 0       | -    | At stop      | <a href="#">"H14_en.02" on page 354</a> |
| H14.03    | 2014-04h              | Gantry axis attribute (master-slave) | 0: Slave axis<br>1: Master axis      | 0       | -    | At stop      | <a href="#">"H14_en.03" on page 354</a> |



| Parameter | Communication Address | Name                                             | Value                                                                                                                                                                                              | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H14.04    | 2014-05h              | Gantry mechanical attribute                      | 0: Rigid gantry scheme 1-Two-axis position control<br>1: Flexible gantry scheme 1-Two-axis position control<br>2: Rigid gantry scheme 2-Master axis position control and slave axis torque control | 0       | -    | At stop     | <a href="#">"H14_en.04" on page 354</a> |
| H14.05    | 2014-06h              | Current axis position sync direction             | 0: Forward<br>1: Reverse                                                                                                                                                                           | 0       | -    | At stop     | <a href="#">"H14_en.05" on page 355</a> |
| H14.07    | 2014-08h              | Gantry sync enable                               | 0: Disabled<br>1: Enabled<br>2: DI-enabled                                                                                                                                                         | 0       | -    | Real-time   | <a href="#">"H14_en.07" on page 355</a> |
| H14.08    | 2014-09h              | Gantry sync position loop proportional gain      | 0.0% to 300.0%                                                                                                                                                                                     | 0.0     | %    | Real-time   | <a href="#">"H14_en.08" on page 356</a> |
| H14.09    | 2014-0Ah              | Gantry sync position loop integral time constant | 0.5 ms–1000.0 ms                                                                                                                                                                                   | 1000.0  | ms   | Real-time   | <a href="#">"H14_en.09" on page 356</a> |
| H14.10    | 2014-0Bh              | Gantry sync speed loop proportional gain         | 0.0% to 300.0%                                                                                                                                                                                     | 0.0     | %    | Real-time   | <a href="#">"H14_en.10" on page 356</a> |
| H14.11    | 2014-0Ch              | Gantry sync speed loop integral time constant    | 0.5 ms–1000.0 ms                                                                                                                                                                                   | 1000.0  | ms   | Real-time   | <a href="#">"H14_en.11" on page 357</a> |
| H14.12    | 2014-0Dh              | Gantry sync speed limit                          | 0.0rpm to 6000.0rpm                                                                                                                                                                                | 50.0    | RPM  | Real-time   | <a href="#">"H14_en.12" on page 357</a> |
| H14.13    | 2014-0Eh              | Gantry alignment speed                           | 0.0rpm to 3000.0rpm                                                                                                                                                                                | 10.0    | RPM  | Real-time   | <a href="#">"H14_en.13" on page 357</a> |
| H14.14    | 2014-0Fh              | Gantry alignment acc./dec. time                  | 0 ms–1000 ms                                                                                                                                                                                       | 100     | ms   | Real-time   | <a href="#">"H14_en.14" on page 357</a> |
| H14.18    | 2014-13h              | Torque pre-alignment before gantry homing        | 0: No operation<br>1: Enabled                                                                                                                                                                      | 0       | -    | At stop     | <a href="#">"H14_en.18" on page 358</a> |
| H14.20    | 2014-15h              | Gantry aligned by default upon power-on          | 0: No operation<br>1: Align at first power-on                                                                                                                                                      | 1       | -    | At stop     | <a href="#">"H14_en.20" on page 358</a> |

| Parameter | Communication Address | Name                                                                           | Value                                                                                                            | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|---------|------|--------------|-----------------------------------------|
| H14.21    | 2014-16h              | Gantry alignment mode                                                          | 0: Gantry homing alignment<br>2: Gantry torque alignment<br>3: Gantry enable alignment<br>4: Gantry DI alignment | 0       | -    | At stop      | <a href="#">"H14_en.21" on page 358</a> |
| H14.25    | 2014-1Ah              | Flexible gantry homing - Master/slave home deviation auto-tuning               | 0: Disabled<br>1: Torque alignment auto-tuning<br>2: Position auto-tuning                                        | 0       | -    | Real-time    | <a href="#">"H14_en.25" on page 359</a> |
| H14.26    | 2014-1Bh              | Gantry torque alignment enable                                                 | 0: Disabled<br>1: Enabled<br>2: DI-enabled<br>3: Enabled at power-on                                             | 0       | -    | Real-time    | <a href="#">"H14_en.26" on page 359</a> |
| H14.27    | 2014-1Ch              | Gantry torque alignment torque                                                 | 0.0% to 300.0%                                                                                                   | 10.0    | %    | Real-time    | <a href="#">"H14_en.27" on page 360</a> |
| H14.28    | 2014-1Dh              | Gantry torque alignment count                                                  | 1–2                                                                                                              | 2       | -    | Real-time    | <a href="#">"H14_en.28" on page 360</a> |
| H14.29    | 2014-1Eh              | Gantry torque alignment speed                                                  | 0.0rpm to 3000.0rpm                                                                                              | 10.0    | RPM  | Real-time    | <a href="#">"H14_en.29" on page 360</a> |
| H14.30    | 2014-1Fh              | Gantry torque alignment timeout alarm time                                     | 1s to 65535s                                                                                                     | 100     | s    | Real-time    | <a href="#">"H14_en.30" on page 360</a> |
| H14.31    | 2014-20h              | Gantry torque alignment acc./dec. time                                         | 0 ms–1000 ms                                                                                                     | 100     | ms   | Real-time    | <a href="#">"H14_en.31" on page 361</a> |
| H14.32    | 2014-21h              | Gantry torque alignment zero speed threshold                                   | 0.0rpm to 100.0rpm                                                                                               | 2.0     | RPM  | Real-time    | <a href="#">"H14_en.32" on page 361</a> |
| H14.33    | 2014-22h              | Gantry torque alignment mechanical limit evaluation position loop period count | 0–65535                                                                                                          | 5       | -    | Real-time    | <a href="#">"H14_en.33" on page 361</a> |
| H14.35    | 2014-24h              | 2-axis position deviation (encoder unit)                                       | -2147483648p to 2147483647p                                                                                      | 0       | p    | Unchangeable | <a href="#">"H14_en.35" on page 361</a> |
| H14.37    | 2014-26h              | 2-axis speed deviation                                                         | -32767rpm to 32767rpm                                                                                            | 0       | RPM  | Unchangeable | <a href="#">"H14_en.37" on page 362</a> |

| Parameter | Communication Address | Name                                                                               | Value                         | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|------------------------------------------------------------------------------------|-------------------------------|---------|------|--------------|-----------------------------------------|
| H14.38    | 2014-27h              | Torque reference of active axis                                                    | -3276.7% to 3276.7%           | 0.0     | %    | Unchangeable | <a href="#">"H14_en.38" on page 362</a> |
| H14.39    | 2014-28h              | Torque reference of paired axis                                                    | -3276.7% to 3276.7%           | 0.0     | %    | Unchangeable | <a href="#">"H14_en.39" on page 362</a> |
| H14.40    | 2014-29h              | Motor speed of active axis                                                         | -32767rpm to 32767rpm         | 0       | RPM  | Unchangeable | <a href="#">"H14_en.40" on page 363</a> |
| H14.41    | 2014-2Ah              | Motor speed of paired axis                                                         | -32767rpm to 32767rpm         | 0       | RPM  | Unchangeable | <a href="#">"H14_en.41" on page 363</a> |
| H14.44    | 2014-2Dh              | Alarm time threshold of large gantry deviation                                     | 0.5 ms–1000.0 ms              | 3.0     | ms   | Real-time    | <a href="#">"H14_en.44" on page 363</a> |
| H14.45    | 2014-2Eh              | Gantry position alarm threshold                                                    | -2147483648p to 2147483647p   | 50000   | p    | At stop      | <a href="#">"H14_en.45" on page 363</a> |
| H14.47    | 2014-30h              | Large gantry position deviation alarm enable                                       | 0: Disabled<br>1: Enabled     | 1       | -    | Real-time    | <a href="#">"H14_en.47" on page 364</a> |
| H14.48    | 2014-31h              | Alarm time threshold of large gantry torque deviation                              | 0.5 ms–1000.0 ms              | 3.0     | ms   | Real-time    | <a href="#">"H14_en.48" on page 364</a> |
| H14.49    | 2014-32h              | Gantry torque deviation alarm threshold                                            | 0.0% to 800.0%                | 300.0   | %    | At stop      | <a href="#">"H14_en.49" on page 364</a> |
| H14.50    | 2014-33h              | Large gantry torque deviation alarm enable                                         | 0: Disabled<br>1: Enabled     | 0       | -    | Real-time    | <a href="#">"H14_en.50" on page 365</a> |
| H14.52    | 2014-35h              | Gantry mismatch                                                                    | 0–1451                        | 0       | -    | Unchangeable | <a href="#">"H14_en.52" on page 365</a> |
| H14.71    | 2014-48h              | Flexible gantry homing - Enable aligning slave axis homing position to home offset | 0: No operation<br>1: Enabled | 0       | -    | Real-time    | <a href="#">"H14_en.71" on page 365</a> |
| H14.74    | 2014-4Bh              | Gantry scheme 2 slave axis enable                                                  | 0: No operation<br>1: Enabled | 0       | -    | At stop      | <a href="#">"H14_en.74" on page 366</a> |

## 1.20 H17 Virtual DI/DO Parameters

| Parameter | Communication Address | Name                             | Value                                                                                                                                                                                                                                     | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H17.90    | 2017-5Bh              | Communication VDI enable         | 0: Disabled<br>1: Enabled                                                                                                                                                                                                                 | 0       | -    | At stop     | <a href="#">"H17_en.90" on page 366</a> |
| H17.91    | 2017-5Ch              | VDI default value after power-on | bit0: VDI1<br>bit1: VDI2<br>bit2: VDI3<br>bit3: VDI4<br>bit4: VDI5<br>bit5: VDI6<br>bit6: VDI7<br>bit7: VDI8<br>bit8: VDI9<br>bit9: VDI10<br>bit10: VDI11<br>bit11: VDI12<br>bit12: VDI13<br>bit13: VDI14<br>bit14: VDI15<br>bit15: VDI16 | 0       | -    | Real-time   | <a href="#">"H17_en.91" on page 366</a> |
| H17.00    | 2017-01h              | VDI1 function                    | See <a href="#">"H17_en.00" on page 367</a> for details.                                                                                                                                                                                  | 0       | -    | Real-time   | <a href="#">"H17_en.00" on page 367</a> |
| H17.01    | 2017-02h              | VDI1 logic level selection       | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1                                                                                                                                             | 0       | -    | Real-time   | <a href="#">"H17_en.01" on page 369</a> |
| H17.02    | 2017-03h              | VDI2 function                    | See H17.00.                                                                                                                                                                                                                               | 0       | -    | Real-time   | <a href="#">"H17_en.02" on page 369</a> |
| H17.03    | 2017-04h              | VDI2 logic level selection       | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1                                                                                                                                             | 0       | -    | Real-time   | <a href="#">"H17_en.03" on page 369</a> |
| H17.04    | 2017-05h              | VDI3 function                    | See H17.00.                                                                                                                                                                                                                               | 0       | -    | Real-time   | <a href="#">"H17_en.04" on page 370</a> |
| H17.05    | 2017-06h              | VDI3 logic level selection       | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1                                                                                                                                             | 0       | -    | Real-time   | <a href="#">"H17_en.05" on page 370</a> |
| H17.06    | 2017-07h              | VDI4 function                    | See H17.00.                                                                                                                                                                                                                               | 0       | -    | Real-time   | <a href="#">"H17_en.06" on page 370</a> |
| H17.07    | 2017-08h              | VDI4 logic level selection       | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1                                                                                                                                             | 0       | -    | Real-time   | <a href="#">"H17_en.07" on page 371</a> |

| Parameter | Communication Address | Name                        | Value                                                                                         | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------|-----------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H17.08    | 2017-09h              | VDI5 function               | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.08" on page 371</a> |
| H17.09    | 2017-0Ah              | VDI5 logic level selection  | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.09" on page 371</a> |
| H17.10    | 2017-0Bh              | VDI6 function               | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.10" on page 371</a> |
| H17.11    | 2017-0Ch              | VDI6 logic level selection  | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.11" on page 372</a> |
| H17.12    | 2017-0Dh              | VDI7 function               | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.12" on page 372</a> |
| H17.13    | 2017-0Eh              | VDI7 logic level selection  | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.13" on page 372</a> |
| H17.14    | 2017-0Fh              | VDI8 function               | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.14" on page 372</a> |
| H17.15    | 2017-10h              | VDI8 logic level selection  | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.15" on page 373</a> |
| H17.16    | 2017-11h              | VDI9 function               | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.16" on page 373</a> |
| H17.17    | 2017-12h              | VDI9 logic level selection  | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.17" on page 373</a> |
| H17.18    | 2017-13h              | VDI10 function              | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.18" on page 374</a> |
| H17.19    | 2017-14h              | VDI10 logic level selection | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.19" on page 374</a> |
| H17.20    | 2017-15h              | VDI11 function              | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.20" on page 374</a> |
| H17.21    | 2017-16h              | VDI11 logic level selection | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.21" on page 374</a> |
| H17.22    | 2017-17h              | VDI12 function              | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.22" on page 375</a> |

| Parameter | Communication Address | Name                        | Value                                                                                         | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------|-----------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H17.23    | 2017-18h              | VDI12 logic level selection | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.23" on page 375</a> |
| H17.24    | 2017-19h              | VDI13 function              | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.24" on page 375</a> |
| H17.25    | 2017-1Ah              | VDI13 logic level selection | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.25" on page 375</a> |
| H17.26    | 2017-1Bh              | VDI14 function              | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.26" on page 376</a> |
| H17.27    | 2017-1Ch              | VDI14 logic level selection | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.27" on page 376</a> |
| H17.28    | 2017-1Dh              | VDI15 function              | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.28" on page 376</a> |
| H17.29    | 2017-1Eh              | VDI15 logic level selection | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.29" on page 377</a> |
| H17.30    | 2017-1Fh              | VDI16 function              | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.30" on page 377</a> |
| H17.31    | 2017-20h              | VDI16 logic level selection | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.31" on page 377</a> |
| H17.92    | 2017-5Dh              | Communication VDO enable    | 0: Disabled<br>1: Enabled                                                                     | 0       | -    | At stop     | <a href="#">"H17_en.92" on page 377</a> |

| Parameter | Communication Address | Name                             | Value                                                                                                                                                                                                                                     | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|--------------|-----------------------------------------|
| H17.93    | 2017-5Eh              | VDO default value after power-on | bit0: VDO1<br>bit1: VDO2<br>bit2: VDO3<br>bit3: VDO4<br>bit4: VDO5<br>bit5: VDO6<br>bit6: VDO7<br>bit7: VDO8<br>bit8: VDO9<br>bit9: VDO10<br>bit10: VDO11<br>bit11: VDO12<br>bit12: VDO13<br>bit13: VDO14<br>bit14: VDO15<br>bit15: VDO16 | 0       | -    | At stop      | <a href="#">"H17_en.93" on page 378</a> |
| H17.32    | 2017-21h              | VDO virtual level                | 0–65535                                                                                                                                                                                                                                   | 0       | -    | Unchangeable | <a href="#">"H17_en.32" on page 378</a> |
| H17.33    | 2017-22h              | VDO1 function                    | See <a href="#">"H17_en.33" on page 379</a> for details.                                                                                                                                                                                  | 0       | -    | Real-time    | <a href="#">"H17_en.33" on page 379</a> |
| H17.34    | 2017-23h              | VDO1 logic level selection       | 0: Output 1 upon active logic<br>1: Output 0 upon active logic                                                                                                                                                                            | 0       | -    | Real-time    | <a href="#">"H17_en.34" on page 380</a> |
| H17.35    | 2017-24h              | VDO2 function                    | See H17.33.                                                                                                                                                                                                                               | 0       | -    | Real-time    | <a href="#">"H17_en.35" on page 380</a> |
| H17.36    | 2017-25h              | VDO2 logic level selection       | 0: Output 1 upon active logic<br>1: Output 0 upon active logic                                                                                                                                                                            | 0       | -    | Real-time    | <a href="#">"H17_en.36" on page 380</a> |
| H17.37    | 2017-26h              | VDO3 function                    | See H17.33.                                                                                                                                                                                                                               | 0       | -    | Real-time    | <a href="#">"H17_en.37" on page 380</a> |
| H17.38    | 2017-27h              | VDO3 logic level selection       | 0: Output 1 upon active logic<br>1: Output 0 upon active logic                                                                                                                                                                            | 0       | -    | Real-time    | <a href="#">"H17_en.38" on page 381</a> |
| H17.39    | 2017-28h              | VDO4 function                    | See H17.33.                                                                                                                                                                                                                               | 0       | -    | Real-time    | <a href="#">"H17_en.39" on page 381</a> |
| H17.40    | 2017-29h              | VDO4 logic level selection       | 0: Output 1 upon active logic<br>1: Output 0 upon active logic                                                                                                                                                                            | 0       | -    | Real-time    | <a href="#">"H17_en.40" on page 381</a> |
| H17.41    | 2017-2Ah              | VDO5 function                    | See H17.33.                                                                                                                                                                                                                               | 0       | -    | Real-time    | <a href="#">"H17_en.41" on page 382</a> |
| H17.42    | 2017-2Bh              | VDO5 logic level selection       | 0: Output 1 upon active logic<br>1: Output 0 upon active logic                                                                                                                                                                            | 0       | -    | Real-time    | <a href="#">"H17_en.42" on page 382</a> |
| H17.43    | 2017-2Ch              | VDO6 function                    | See H17.33.                                                                                                                                                                                                                               | 0       | -    | Real-time    | <a href="#">"H17_en.43" on page 382</a> |
| H17.44    | 2017-2Dh              | VDO6 logic level selection       | 0: Output 1 upon active logic<br>1: Output 0 upon active logic                                                                                                                                                                            | 0       | -    | Real-time    | <a href="#">"H17_en.44" on page 382</a> |
| H17.45    | 2017-2Eh              | VDO7 function                    | See H17.33.                                                                                                                                                                                                                               | 0       | -    | Real-time    | <a href="#">"H17_en.45" on page 383</a> |

| Parameter | Communication Address | Name                        | Value                                                          | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------|----------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H17.46    | 2017-2Fh              | VDO7 logic level selection  | 0: Output 1 upon active logic<br>1: Output 0 upon active logic | 0       | -    | Real-time   | <a href="#">"H17_en.46" on page 383</a> |
| H17.47    | 2017-30h              | VDO8 function               | See H17.33.                                                    | 0       | -    | Real-time   | <a href="#">"H17_en.47" on page 383</a> |
| H17.48    | 2017-31h              | VDO8 logic level selection  | 0: Output 1 upon active logic<br>1: Output 0 upon active logic | 0       | -    | Real-time   | <a href="#">"H17_en.48" on page 383</a> |
| H17.49    | 2017-32h              | VDO9 function               | See H17.33.                                                    | 0       | -    | Real-time   | <a href="#">"H17_en.49" on page 384</a> |
| H17.50    | 2017-33h              | VDO9 logic level selection  | 0: Output 1 upon active logic<br>1: Output 0 upon active logic | 0       | -    | Real-time   | <a href="#">"H17_en.50" on page 384</a> |
| H17.51    | 2017-34h              | VDO10 function              | See H17.33.                                                    | 0       | -    | Real-time   | <a href="#">"H17_en.51" on page 384</a> |
| H17.52    | 2017-35h              | VDO10 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic | 0       | -    | Real-time   | <a href="#">"H17_en.52" on page 385</a> |
| H17.53    | 2017-36h              | VDO11 function              | See H17.33.                                                    | 0       | -    | Real-time   | <a href="#">"H17_en.53" on page 385</a> |
| H17.54    | 2017-37h              | VDO11 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic | 0       | -    | Real-time   | <a href="#">"H17_en.54" on page 385</a> |
| H17.55    | 2017-38h              | VDO12 function              | See H17.33.                                                    | 0       | -    | Real-time   | <a href="#">"H17_en.55" on page 385</a> |
| H17.56    | 2017-39h              | VDO12 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic | 0       | -    | Real-time   | <a href="#">"H17_en.56" on page 386</a> |
| H17.57    | 2017-3Ah              | VDO13 function              | See H17.33.                                                    | 0       | -    | Real-time   | <a href="#">"H17_en.57" on page 386</a> |
| H17.58    | 2017-3Bh              | VDO13 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic | 0       | -    | Real-time   | <a href="#">"H17_en.58" on page 386</a> |
| H17.59    | 2017-3Ch              | VDO14 function              | See H17.33.                                                    | 0       | -    | Real-time   | <a href="#">"H17_en.59" on page 386</a> |
| H17.60    | 2017-3Dh              | VDO14 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic | 0       | -    | Real-time   | <a href="#">"H17_en.60" on page 387</a> |
| H17.61    | 2017-3Eh              | VDO15 function              | See H17.33.                                                    | 0       | -    | Real-time   | <a href="#">"H17_en.61" on page 387</a> |
| H17.62    | 2017-3Fh              | VDO15 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic | 0       | -    | Real-time   | <a href="#">"H17_en.62" on page 387</a> |
| H17.63    | 2017-40h              | VDO16 function              | See H17.33.                                                    | 0       | -    | Real-time   | <a href="#">"H17_en.63" on page 388</a> |
| H17.64    | 2017-41h              | VDO16 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic | 0       | -    | Real-time   | <a href="#">"H17_en.64" on page 388</a> |



## 1.21 H18 Position Comparison Output Parameters

| Parameter | Communication Address | Name                                         | Value                                                                                                                                                                                                                                                                                                                                                                                                | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H18.00    | 2018-01h              | Position comparison output selection         | 0: Disable<br>1: Enable (rising edge-triggered)                                                                                                                                                                                                                                                                                                                                                      | 0       | -    | Real-time   | <a href="#">"H18_en.00" on page 388</a> |
| H18.01    | 2018-02h              | Position comparison output feedback source   | 0: Motor encoder feedback<br>1: Fully closed-loop position feedback                                                                                                                                                                                                                                                                                                                                  | 0       | -    | Real-time   | <a href="#">"H18_en.01" on page 388</a> |
| H18.02    | 2018-03h              | Position comparison resolution               | 0: 24-bit<br>1: 23-bit<br>2: 22-bit<br>3: 21-bit<br>4: 20-bit<br>5: 19-bit<br>6: 18-bit<br>7: 17-bit                                                                                                                                                                                                                                                                                                 | 1       | -    | Real-time   | <a href="#">"H18_en.02" on page 389</a> |
| H18.03    | 2018-04h              | Position comparison mode                     | 0: Individual comparison mode<br>1: Cyclic comparison mode<br>2: Fixed cyclic comparison mode                                                                                                                                                                                                                                                                                                        | 0       | -    | Real-time   | <a href="#">"H18_en.03" on page 389</a> |
| H18.04    | 2018-05h              | Current position as zero                     | 0: Disable<br>1: Enable (rising edge-triggered)                                                                                                                                                                                                                                                                                                                                                      | 0       | -    | Real-time   | <a href="#">"H18_en.04" on page 390</a> |
| H18.05    | 2018-06h              | Position comparison output width             | 0.1 ms–204.7 ms                                                                                                                                                                                                                                                                                                                                                                                      | 0.1     | ms   | Real-time   | <a href="#">"H18_en.05" on page 390</a> |
| H18.06    | 2018-07h              | Position comparison output ABZ port polarity | Bit 0: OCZ output logic<br>0: Positive, output high level upon active logic<br>1: Negative, output low level upon active logic<br>Bit 1: Z port output logic<br>0: Positive, output high level upon active logic<br>1: Negative, output low level upon active logic<br>bit2: A/B output logic<br>0: Positive, output high level upon active logic<br>1: Negative, output low level upon active logic | 0       | -    | Real-time   | <a href="#">"H18_en.06" on page 390</a> |

| Parameter | Communication Address | Name                                          | Value                                                                                                                                                                                                                                                                     | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|--------------|-----------------------------------------|
| H18.07    | 2018-08h              | Position comparison start point               | 0–40                                                                                                                                                                                                                                                                      | 0       | -    | Real-time    | <a href="#">"H18_en.07" on page 391</a> |
| H18.08    | 2018-09h              | Position comparison end point                 | 0–40                                                                                                                                                                                                                                                                      | 0       | -    | Real-time    | <a href="#">"H18_en.08" on page 391</a> |
| H18.09    | 2018-0Ah              | Current state of position comparison          | 0–1024                                                                                                                                                                                                                                                                    | 0       | -    | Unchangeable | <a href="#">"H18_en.09" on page 391</a> |
| H18.10    | 2018-0Bh              | Real-time position of position comparison     | -2147483648–2147483647                                                                                                                                                                                                                                                    | 0       | -    | Unchangeable | <a href="#">"H18_en.10" on page 392</a> |
| H18.12    | 2018-0Dh              | Zero offset of position comparison            | -2147483648–2147483647                                                                                                                                                                                                                                                    | 0       | -    | Real-time    | <a href="#">"H18_en.12" on page 392</a> |
| H18.14    | 2018-0Fh              | Position comparison output delay compensation | –12.00 $\mu$ s to +12.00 $\mu$ s                                                                                                                                                                                                                                          | 0.00    | us   | Real-time    | <a href="#">"H18_en.14" on page 392</a> |
| H18.15    | 2018-10h              | Fixed cyclic comparison                       | 1–65535                                                                                                                                                                                                                                                                   | 1       | -    | Real-time    | <a href="#">"H18_en.15" on page 392</a> |
| H18.16    | 2018-11h              | ABZ output function setting                   | bit0: OCZ output function<br>0: Frequency-division output<br>1: Position comparison<br>bit1: Z port output function<br>0: Frequency-division output<br>1: Position comparison<br>bit2: A/B port output function<br>0: Frequency-division output<br>1: Position comparison | 0       | -    | Real-time    | <a href="#">"H18_en.16" on page 393</a> |
| H18.17    | 2018-12h              | Number of fixed mode cycles                   | 0–65535                                                                                                                                                                                                                                                                   | 0       | -    | Unchangeable | <a href="#">"H18_en.17" on page 393</a> |

## 1.22 H19 Target Position Parameters

| Parameter | Communication Address | Name                                     | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H19.00    | 2019-01h              | Target value of position comparison 1    | -2147483648~2147483647                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0       | -    | Real-time   | <a href="#">"H19_en.00" on page 394</a> |
| H19.02    | 2019-03h              | Attribute value of position comparison 1 | bit0: Current position changes from "less than" to "more than" the comparison point<br>bit1: Current position changes from "more than" to "less than" the comparison point<br>bit2: Reserved<br>bit3: Reserved<br>bit4: Reserved<br>bit5: Reserved<br>bit6: Reserved<br>bit7: DO1 output<br>bit8: DO2 output<br>bit9: DO3 output<br>bit10: DO4 output<br>bit11: DO5 output<br>bit12: Frequency-division A output<br>bit13: Frequency-division B output<br>bit14: Frequency-division Z output<br>bit15: Frequency-division OCZ output | 0       | -    | Real-time   | <a href="#">"H19_en.02" on page 394</a> |
| H19.03    | 2019-04h              | Target value of position comparison 2    | -2147483648~2147483647                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0       | -    | Real-time   | <a href="#">"H19_en.03" on page 395</a> |
| H19.05    | 2019-06h              | Attribute value of position comparison 2 | See H19.02.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0       | -    | Real-time   | <a href="#">"H19_en.05" on page 395</a> |
| H19.06    | 2019-07h              | Target value of position comparison 3    | -2147483648~2147483647                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0       | -    | Real-time   | <a href="#">"H19_en.06" on page 395</a> |
| H19.08    | 2019-09h              | Attribute value of position comparison 3 | See H19.02.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0       | -    | Real-time   | <a href="#">"H19_en.08" on page 395</a> |
| H19.09    | 2019-0Ah              | Target value of position comparison 4    | -2147483648~2147483647                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0       | -    | Real-time   | <a href="#">"H19_en.09" on page 396</a> |

| Parameter | Communication Address | Name                                      | Value                  | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------|------------------------|---------|------|-------------|-----------------------------------------|
| H19.11    | 2019-0Ch              | Attribute value of position comparison 4  | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.11" on page 396</a> |
| H19.12    | 2019-0Dh              | Target value of position comparison 5     | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.12" on page 396</a> |
| H19.14    | 2019-0Fh              | Attribute value of position comparison 5  | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.14" on page 396</a> |
| H19.15    | 2019-10h              | Target value of position comparison 6     | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.15" on page 397</a> |
| H19.17    | 2019-12h              | Attribute value of position comparison 6  | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.17" on page 397</a> |
| H19.18    | 2019-13h              | Target value of position comparison 7     | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.18" on page 397</a> |
| H19.20    | 2019-15h              | Attribute value of position comparison 7  | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.20" on page 397</a> |
| H19.21    | 2019-16h              | Target value of position comparison 8     | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.21" on page 398</a> |
| H19.23    | 2019-18h              | Attribute value of position comparison 8  | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.23" on page 398</a> |
| H19.24    | 2019-19h              | Target value of position comparison 9     | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.24" on page 398</a> |
| H19.26    | 2019-1Bh              | Attribute value of position comparison 9  | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.26" on page 399</a> |
| H19.27    | 2019-1Ch              | Target value of position comparison 10    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.27" on page 399</a> |
| H19.29    | 2019-1Eh              | Attribute value of position comparison 10 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.29" on page 399</a> |
| H19.30    | 2019-1Fh              | Target value of position comparison 11    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.30" on page 399</a> |

| Parameter | Communication Address | Name                                      | Value                  | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------|------------------------|---------|------|-------------|-----------------------------------------|
| H19.32    | 2019-21h              | Attribute value of position comparison 11 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.32" on page 400</a> |
| H19.33    | 2019-22h              | Target value of position comparison 12    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.33" on page 400</a> |
| H19.35    | 2019-24h              | Attribute value of position comparison 12 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.35" on page 400</a> |
| H19.36    | 2019-25h              | Target value of position comparison 13    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.36" on page 400</a> |
| H19.38    | 2019-27h              | Attribute value of position comparison 13 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.38" on page 401</a> |
| H19.39    | 2019-28h              | Target value of position comparison 14    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.39" on page 401</a> |
| H19.41    | 2019-2Ah              | Attribute value of position comparison 14 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.41" on page 401</a> |
| H19.42    | 2019-2Bh              | Target value of position comparison 15    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.42" on page 401</a> |
| H19.44    | 2019-2Dh              | Attribute value of position comparison 15 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.44" on page 402</a> |
| H19.45    | 2019-2Eh              | Target value of position comparison 16    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.45" on page 402</a> |
| H19.47    | 2019-30h              | Attribute value of position comparison 16 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.47" on page 402</a> |
| H19.48    | 2019-31h              | Target value of position comparison 17    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.48" on page 403</a> |
| H19.50    | 2019-33h              | Attribute value of position comparison 17 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.50" on page 403</a> |
| H19.51    | 2019-34h              | Target value of position comparison 18    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.51" on page 403</a> |

| Parameter | Communication Address | Name                                      | Value                  | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------|------------------------|---------|------|-------------|-----------------------------------------|
| H19.53    | 2019-36h              | Attribute value of position comparison 18 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.53" on page 403</a> |
| H19.54    | 2019-37h              | Target value of position comparison 19    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.54" on page 404</a> |
| H19.56    | 2019-39h              | Attribute value of position comparison 19 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.56" on page 404</a> |
| H19.57    | 2019-3Ah              | Target value of position comparison 20    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.57" on page 404</a> |
| H19.59    | 2019-3Ch              | Attribute value of position comparison 20 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.59" on page 404</a> |
| H19.60    | 2019-3Dh              | Target value of position comparison 21    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.60" on page 405</a> |
| H19.62    | 2019-3Fh              | Attribute value of position comparison 21 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.62" on page 405</a> |
| H19.63    | 2019-40h              | Target value of position comparison 22    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.63" on page 405</a> |
| H19.65    | 2019-42h              | Attribute value of position comparison 22 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.65" on page 405</a> |
| H19.66    | 2019-43h              | Target value of position comparison 23    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.66" on page 406</a> |
| H19.68    | 2019-45h              | Attribute value of position comparison 23 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.68" on page 406</a> |
| H19.69    | 2019-46h              | Target value of position comparison 24    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.69" on page 406</a> |
| H19.71    | 2019-48h              | Attribute value of position comparison 24 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.71" on page 407</a> |
| H19.72    | 2019-49h              | Target value of position comparison 25    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.72" on page 407</a> |

| Parameter | Communication Address | Name                                      | Value                  | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------|------------------------|---------|------|-------------|-----------------------------------------|
| H19.74    | 2019-4Bh              | Attribute value of position comparison 25 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.74" on page 407</a> |
| H19.75    | 2019-4Ch              | Target value of position comparison 26    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.75" on page 407</a> |
| H19.77    | 2019-4Eh              | Attribute value of position comparison 26 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.77" on page 408</a> |
| H19.78    | 2019-4Fh              | Target value of position comparison 27    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.78" on page 408</a> |
| H19.80    | 2019-51h              | Attribute value of position comparison 27 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.80" on page 408</a> |
| H19.81    | 2019-52h              | Target value of position comparison 28    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.81" on page 408</a> |
| H19.83    | 2019-54h              | Attribute value of position comparison 28 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.83" on page 409</a> |
| H19.84    | 2019-55h              | Target value of position comparison 29    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.84" on page 409</a> |
| H19.86    | 2019-57h              | Attribute value of position comparison 29 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.86" on page 409</a> |
| H19.87    | 2019-58h              | Target value of position comparison 30    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.87" on page 409</a> |
| H19.89    | 2019-5Ah              | Attribute value of position comparison 30 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.89" on page 410</a> |
| H19.90    | 2019-5Bh              | Target value of position comparison 31    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.90" on page 410</a> |
| H19.92    | 2019-5Dh              | Attribute value of position comparison 31 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.92" on page 410</a> |
| H19.93    | 2019-5Eh              | Target value of position comparison 32    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.93" on page 411</a> |

| Parameter | Communication Address | Name                                      | Value                  | Default | Unit | Change Mode | Page                                     |
|-----------|-----------------------|-------------------------------------------|------------------------|---------|------|-------------|------------------------------------------|
| H19.95    | 2019-60h              | Attribute value of position comparison 32 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.95" on page 411</a>  |
| H19.96    | 2019-61h              | Target value of position comparison 33    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.96" on page 411</a>  |
| H19.98    | 2019-63h              | Attribute value of position comparison 33 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.98" on page 411</a>  |
| H19.99    | 2019-64h              | Target value of position comparison 34    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.99" on page 412</a>  |
| H19.101   | 2019-66h              | Attribute value of position comparison 34 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.101" on page 412</a> |
| H19.102   | 2019-67h              | Target value of position comparison 35    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.102" on page 412</a> |
| H19.104   | 2019-69h              | Attribute value of position comparison 35 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.104" on page 412</a> |
| H19.105   | 2019-6Ah              | Target value of position comparison 36    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.105" on page 413</a> |
| H19.107   | 2019-6Ch              | Attribute value of position comparison 36 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.107" on page 413</a> |
| H19.108   | 2019-6Dh              | Target value of position comparison 37    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.108" on page 413</a> |
| H19.110   | 2019-6Fh              | Attribute value of position comparison 37 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.110" on page 413</a> |
| H19.111   | 2019-70h              | Target value of position comparison 38    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.111" on page 414</a> |
| H19.113   | 2019-72h              | Attribute value of position comparison 38 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.113" on page 414</a> |
| H19.114   | 2019-73h              | Target value of position comparison 39    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.114" on page 414</a> |



| Parameter | Communication Address | Name                                      | Value                  | Default | Unit | Change Mode | Page                                     |
|-----------|-----------------------|-------------------------------------------|------------------------|---------|------|-------------|------------------------------------------|
| H19.116   | 2019-75h              | Attribute value of position comparison 39 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.116" on page 415</a> |
| H19.117   | 2019-76h              | Target value of position comparison 40    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.117" on page 415</a> |
| H19.119   | 2019-78h              | Attribute value of position comparison 40 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.119" on page 415</a> |

## 1.23 H1F Software Tool Parameters

| Parameter | Communication Address | Name                                           | Value   | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|------------------------------------------------|---------|---------|------|--------------|-----------------------------------------|
| H1F.90    | 201F-5Bh              | DI function state 1 read through communication | 0–65535 | 0       | -    | Unchangeable | <a href="#">"H1F_en.90" on page 415</a> |
| H1F.91    | 201F-5Ch              | DI function state 2 read through communication | 0–65535 | 0       | -    | Unchangeable | <a href="#">"H1F_en.91" on page 416</a> |
| H1F.92    | 201F-5Dh              | DI function state 3 read through communication | 0–65535 | 0       | -    | Unchangeable | <a href="#">"H1F_en.92" on page 416</a> |
| H1F.93    | 201F-5Eh              | DI function state 4 read through communication | 0–65535 | 0       | -    | Unchangeable | <a href="#">"H1F_en.93" on page 417</a> |
| H1F.94    | 201F-5Fh              | DO function state 1 read through communication | 0–65535 | 0       | -    | Unchangeable | <a href="#">"H1F_en.94" on page 417</a> |
| H1F.95    | 201F-60h              | DO function state 2 read through communication | 0–65535 | 0       | -    | Unchangeable | <a href="#">"H1F_en.95" on page 417</a> |

## 1.24 H21 Current Loop Gain Switchover Parameters

| Parameter | Communication Address | Name                         | Value                         | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------|-------------------------------|---------|------|-------------|-----------------------------------------|
| H21.00    | 2021-01h              | Current loop gain switchover | 0: No operation<br>1: Enabled | 0       | -    | Real-time   | <a href="#">"H21_en.00" on page 418</a> |

## 1.25 H22 Process Segment Parameters

| Parameter | Communication Address | Name                                                         | Value                                                                                                                                                                                                                                                                                                              | Default    | Unit           | Change Mode | Page                                    |
|-----------|-----------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|----------------|-------------|-----------------------------------------|
| H22.00    | 2022-01h              | Process segment command trigger                              | 0–1000                                                                                                                                                                                                                                                                                                             | 0          | -              | Real-time   | <a href="#">"H22_en.00" on page 418</a> |
| H22.01    | 2022-02h              | Process segment triggered by the event rising edge           | 0–65535                                                                                                                                                                                                                                                                                                            | 0          | -              | Real-time   | <a href="#">"H22_en.01" on page 419</a> |
| H22.02    | 2022-03h              | Process segment triggered by the event falling edge          | 0–65535                                                                                                                                                                                                                                                                                                            | 0          | -              | Real-time   | <a href="#">"H22_en.02" on page 419</a> |
| H22.03    | 2022-04h              | Acceleration/Deceleration time upon technology segment pause | 0: Acceleration/Deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4<br>5: Acceleration/Deceleration time 5<br>6: Acceleration/Deceleration time 6<br>7: Acceleration/Deceleration time 7 | 0          | -              | Real-time   | <a href="#">"H22_en.03" on page 420</a> |
| H22.04    | 2022-05h              | Positive software position limit                             | -2147483648 to 2147483647                                                                                                                                                                                                                                                                                          | 2147483647 | Reference unit | Real-time   | <a href="#">"H22_en.04" on page 421</a> |

| Parameter | Communication Address | Name                             | Value                              | Default     | Unit           | Change Mode  | Page                                    |
|-----------|-----------------------|----------------------------------|------------------------------------|-------------|----------------|--------------|-----------------------------------------|
| H22.06    | 2022-07h              | Negative software position limit | -2147483648 to 2147483647          | -2147483648 | Reference unit | Real-time    | <a href="#">"H22_en.06" on page 421</a> |
| H22.08    | 2022-09h              | Process segment number           | 0–65535                            | 0           | -              | Unchangeable | <a href="#">"H22_en.08" on page 421</a> |
| H22.09    | 2022-0Ah              | Process segment function switch  | 0–65535                            | 0           | -              | At stop      | <a href="#">"H22_en.09" on page 421</a> |
| H22.10    | 2022-0Bh              | Process segment state            | 0–65535                            | 0           | -              | Unchangeable | <a href="#">"H22_en.10" on page 422</a> |
| H22.19    | 2022-14h              | Target speed                     | 0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm] | 50.0        | [mm/s]/[rpm]   | Real-time    | <a href="#">"H22_en.19" on page 422</a> |
| H22.20    | 2022-15h              | Target speed 1                   | 0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm] | 200.0       | [mm/s]/[rpm]   | Real-time    | <a href="#">"H22_en.20" on page 423</a> |
| H22.21    | 2022-16h              | Target speed 2                   | 0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm] | 500.0       | [mm/s]/[rpm]   | Real-time    | <a href="#">"H22_en.21" on page 423</a> |
| H22.22    | 2022-17h              | Target speed 3                   | 0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm] | 1000.0      | [mm/s]/[rpm]   | Real-time    | <a href="#">"H22_en.22" on page 423</a> |
| H22.23    | 2022-18h              | Target speed 4                   | 0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm] | 1500.0      | [mm/s]/[rpm]   | Real-time    | <a href="#">"H22_en.23" on page 423</a> |
| H22.24    | 2022-19h              | Target speed 5                   | 0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm] | 2000.0      | [mm/s]/[rpm]   | Real-time    | <a href="#">"H22_en.24" on page 424</a> |
| H22.25    | 2022-1Ah              | Target speed 6                   | 0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm] | 2500.0      | [mm/s]/[rpm]   | Real-time    | <a href="#">"H22_en.25" on page 424</a> |
| H22.26    | 2022-1Bh              | Target speed 7                   | 0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm] | 3000.0      | [mm/s]/[rpm]   | Real-time    | <a href="#">"H22_en.26" on page 424</a> |
| H22.35    | 2022-24h              | Accel/Decel time                 | 0 ms to 65535 ms                   | 50          | ms             | Real-time    | <a href="#">"H22_en.35" on page 424</a> |
| H22.36    | 2022-25h              | Acceleration/Deceleration time 1 | 0 ms to 65535 ms                   | 200         | ms             | Real-time    | <a href="#">"H22_en.36" on page 425</a> |
| H22.37    | 2022-26h              | Acceleration/Deceleration time 2 | 0 ms to 65535 ms                   | 500         | ms             | Real-time    | <a href="#">"H22_en.37" on page 425</a> |

| Parameter | Communication Address | Name                                                             | Value            | Default | Unit | Change Mode | Page                                         |
|-----------|-----------------------|------------------------------------------------------------------|------------------|---------|------|-------------|----------------------------------------------|
| H22.38    | 2022-27h              | Acceleration/<br>Deceleration<br>time 3                          | 0 ms to 65535 ms | 1000    | ms   | Real-time   | <a href="#">" H22_en.38"<br/>on page 425</a> |
| H22.39    | 2022-28h              | Acceleration/<br>Deceleration<br>time 4                          | 0 ms to 65535 ms | 1500    | ms   | Real-time   | <a href="#">" H22_en.39"<br/>on page 426</a> |
| H22.40    | 2022-29h              | Acceleration/<br>Deceleration<br>time 5                          | 0 ms to 65535 ms | 2000    | ms   | Real-time   | <a href="#">" H22_en.40"<br/>on page 426</a> |
| H22.41    | 2022-2Ah              | Acceleration/<br>Deceleration<br>time 6                          | 0 ms to 65535 ms | 2500    | ms   | Real-time   | <a href="#">" H22_en.41"<br/>on page 426</a> |
| H22.42    | 2022-2Bh              | Acceleration/<br>Deceleration<br>time 7                          | 0 ms to 65535 ms | 3000    | ms   | Real-time   | <a href="#">" H22_en.42"<br/>on page 426</a> |
| H22.51    | 2022-34h              | Delay after<br>completion of<br>the process<br>segment           | 0 ms to 65535 ms | 0       | ms   | Real-time   | <a href="#">" H22_en.51"<br/>on page 427</a> |
| H22.52    | 2022-35h              | Delay time 1<br>after<br>completion of<br>the process<br>segment | 0 ms to 65535 ms | 50      | ms   | Real-time   | <a href="#">" H22_en.52"<br/>on page 427</a> |
| H22.53    | 2022-36h              | Delay time 2<br>after<br>completion of<br>the process<br>segment | 0 ms to 65535 ms | 200     | ms   | Real-time   | <a href="#">" H22_en.53"<br/>on page 427</a> |
| H22.54    | 2022-37h              | Delay time 3<br>after<br>completion of<br>the process<br>segment | 0 ms to 65535 ms | 500     | ms   | Real-time   | <a href="#">" H22_en.54"<br/>on page 427</a> |
| H22.55    | 2022-38h              | Delay time 4<br>after<br>completion of<br>the process<br>segment | 0 ms to 65535 ms | 1000    | ms   | Real-time   | <a href="#">" H22_en.55"<br/>on page 428</a> |
| H22.56    | 2022-39h              | Delay time 5<br>after<br>completion of<br>the process<br>segment | 0 ms to 65535 ms | 1500    | ms   | Real-time   | <a href="#">" H22_en.56"<br/>on page 428</a> |

| Parameter | Communication Address | Name                                                 | Value                          | Default | Unit           | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------------------------|--------------------------------|---------|----------------|-------------|-----------------------------------------|
| H22.57    | 2022-3Ah              | Delay time 6 after completion of the process segment | 0 ms to 65535 ms               | 2000    | ms             | Real-time   | <a href="#">"H22_en.57" on page 428</a> |
| H22.58    | 2022-3Bh              | Delay time 7 after completion of the process segment | 0 ms to 65535 ms               | 3000    | ms             | Real-time   | <a href="#">"H22_en.58" on page 429</a> |
| H22.70    | 2022-47h              | Homing mode                                          | -32768–32767                   | -2      | -              | Real-time   | <a href="#">"H22_en.70" on page 429</a> |
| H22.71    | 2022-48h              | Speed of high-speed search for home switch signal    | 0[mm/s]/[rpm]–3000[mm/s]/[rpm] | 100     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H22_en.71" on page 429</a> |
| H22.72    | 2022-49h              | Speed of low-speed search for home switch signal     | 0[mm/s]/[rpm]–1000[mm/s]/[rpm] | 10      | [mm/s]/[rpm]   | Real-time   | <a href="#">"H22_en.72" on page 430</a> |
| H22.73    | 2022-4Ah              | Acceleration/Deceleration time during homing         | 0 ms to 1000 ms                | 1000    | ms             | Real-time   | <a href="#">"H22_en.73" on page 430</a> |
| H22.74    | 2022-4Bh              | Home search time limit                               | 0 ms to 65535 ms               | 10000   | ms             | Real-time   | <a href="#">"H22_en.74" on page 430</a> |
| H22.75    | 2022-4Ch              | Mechanical home offset                               | -2147483648 to 2147483647      | 0       | Reference unit | Real-time   | <a href="#">"H22_en.75" on page 430</a> |
| H22.79    | 2022-50h              | Relative/Absolute homing                             | 0–65535                        | 0       | -              | Real-time   | <a href="#">"H22_en.79" on page 431</a> |
| H22.83    | 2022-54h              | Jump count threshold                                 | 0–65534                        | 0       | -              | Real-time   | <a href="#">"H22_en.83" on page 431</a> |
| H22.84    | 2022-55h              | Jump count threshold 1                               | 0–65534                        | 20      | -              | Real-time   | <a href="#">"H22_en.84" on page 431</a> |
| H22.85    | 2022-56h              | Jump count threshold 2                               | 0–65534                        | 40      | -              | Real-time   | <a href="#">"H22_en.85" on page 432</a> |
| H22.86    | 2022-57h              | Jump count threshold 3                               | 0–65534                        | 80      | -              | Real-time   | <a href="#">"H22_en.86" on page 432</a> |
| H22.87    | 2022-58h              | Jump count threshold 4                               | 0–65534                        | 160     | -              | Real-time   | <a href="#">"H22_en.87" on page 432</a> |
| H22.88    | 2022-59h              | Jump count threshold 5                               | 0–65534                        | 320     | -              | Real-time   | <a href="#">"H22_en.88" on page 432</a> |

| Parameter | Communication Address | Name                   | Value   | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|------------------------|---------|---------|------|-------------|-----------------------------------------|
| H22.89    | 2022-5Ah              | Jump count threshold 6 | 0–65534 | 640     | -    | Real-time   | <a href="#">"H22_en.89" on page 433</a> |
| H22.90    | 2022-5Bh              | Jump count threshold 7 | 0–65534 | 1280    | -    | Real-time   | <a href="#">"H22_en.90" on page 433</a> |

## 1.26 H23 Process Segment Parameters

| Parameter | Communication Address | Name                            | Value                  | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------|------------------------|---------|------|-------------|-----------------------------------------|
| H23.00    | 2023-01h              | Definition of homing            | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.00" on page 433</a> |
| H23.02    | 2023-03h              | Homing data                     | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.02" on page 434</a> |
| H23.04    | 2023-05h              | Definition of process segment 1 | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.04" on page 434</a> |
| H23.06    | 2023-07h              | Data of process segment 1       | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.06" on page 434</a> |
| H23.08    | 2023-09h              | Definition of process segment 2 | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.08" on page 435</a> |
| H23.10    | 2023-0Bh              | Data of process segment 2       | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.10" on page 435</a> |
| H23.12    | 2023-0Dh              | Definition of process segment 3 | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.12" on page 435</a> |
| H23.14    | 2023-0Fh              | Data of process segment 3       | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.14" on page 435</a> |
| H23.16    | 2023-11h              | Definition of process segment 4 | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.16" on page 436</a> |
| H23.18    | 2023-13h              | Data of process segment 4       | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.18" on page 436</a> |
| H23.20    | 2023-15h              | Definition of process segment 5 | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.20" on page 436</a> |
| H23.22    | 2023-17h              | Data of process segment 5       | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.22" on page 436</a> |
| H23.24    | 2023-19h              | Definition of process segment 6 | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.24" on page 437</a> |

| Parameter | Communication Address | Name                             | Value                  | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------|------------------------|---------|------|-------------|-----------------------------------------|
| H23.26    | 2023-1Bh              | Data of process segment 6        | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.26" on page 437</a> |
| H23.28    | 2023-1Dh              | Definition of process segment 7  | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.28" on page 437</a> |
| H23.30    | 2023-1Fh              | Data of process segment 7        | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.30" on page 438</a> |
| H23.32    | 2023-21h              | Definition of process segment 8  | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.32" on page 438</a> |
| H23.34    | 2023-23h              | Data of process segment 8        | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.34" on page 438</a> |
| H23.36    | 2023-25h              | Definition of process segment 9  | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.36" on page 438</a> |
| H23.38    | 2023-27h              | Data of process segment 9        | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.38" on page 439</a> |
| H23.40    | 2023-29h              | Definition of process segment 10 | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.40" on page 439</a> |
| H23.42    | 2023-2Bh              | Data of process segment 10       | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.42" on page 439</a> |
| H23.44    | 2023-2Dh              | Definition of process segment 11 | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.44" on page 439</a> |
| H23.46    | 2023-2Fh              | Data of process segment 11       | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.46" on page 440</a> |
| H23.48    | 2023-31h              | Definition of process segment 12 | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.48" on page 440</a> |
| H23.50    | 2023-33h              | Data of process segment 12       | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.50" on page 440</a> |
| H23.52    | 2023-35h              | Definition of process segment 13 | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.52" on page 441</a> |
| H23.54    | 2023-37h              | Data of process segment 13       | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.54" on page 441</a> |
| H23.56    | 2023-39h              | Definition of process segment 14 | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.56" on page 441</a> |
| H23.58    | 2023-3Bh              | Data of process segment 14       | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.58" on page 441</a> |

| Parameter | Communication Address | Name                             | Value                  | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------|------------------------|---------|------|-------------|-----------------------------------------|
| H23.60    | 2023-3Dh              | Definition of process segment 15 | 0-4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.60" on page 442</a> |
| H23.62    | 2023-3Fh              | Data of process segment 15       | -2147483648-2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.62" on page 442</a> |

## 1.27 H30 Related Variables Read through Communication

| Parameter | Communication Address | Name                                                  | Value   | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|-------------------------------------------------------|---------|---------|------|--------------|-----------------------------------------|
| H30.00    | 2030-01h              | Servo state read by communication                     | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H30_en.00" on page 442</a> |
| H30.01    | 2030-02h              | DO function state 1 read through communication        | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H30_en.01" on page 443</a> |
| H30.02    | 2030-03h              | DO function state 2 read through communication        | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H30_en.02" on page 443</a> |
| H30.03    | 2030-04h              | Input pulse reference sampling read via communication | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H30_en.03" on page 443</a> |
| H30.16    | 2030-11h              | 1st encoder communication timeout count               | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H30_en.16" on page 444</a> |
| H30.17    | 2030-12h              | 1st encoder communication CRC error count             | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H30_en.17" on page 444</a> |
| H30.18    | 2030-13h              | 1st encoder communication frame stop bit error count  | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H30_en.18" on page 444</a> |



## 1.28 H31 References Set through Communication

| Parameter | Communication Address | Name                                                          | Value                                      | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------------------------------------|--------------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H31.00    | 2031-01h              | VDI virtual level set through communication                   | 0–65535                                    | 0       | -            | Real-time   | <a href="#">"H31_en.00" on page 444</a> |
| H31.01    | 2031-02h              | Frequency-division output frequency set through communication | 0 Hz–16000000 Hz                           | 0       | Hz           | Real-time   | <a href="#">"H31_en.01" on page 445</a> |
| H31.04    | 2031-05h              | DO state set through communication                            | 0–65535                                    | 0       | -            | Real-time   | <a href="#">"H31_en.04" on page 445</a> |
| H31.05    | 2031-06h              | AO set through communication                                  | -10000 mV–10000 mV                         | 0       | mV           | Real-time   | <a href="#">"H31_en.05" on page 445</a> |
| H31.09    | 2031-0Ah              | Speed reference set via communication                         | -9999.000[mm/s]/[rpm]–9999.000[mm/s]/[rpm] | 0.000   | [mm/s]/[rpm] | Real-time   | <a href="#">"H31_en.09" on page 446</a> |
| H31.11    | 2031-0Ch              | Torque reference set via communication                        | -100.000% to 100.000%                      | 0.000   | %            | Real-time   | <a href="#">"H31_en.11" on page 446</a> |

## 1.29 H32 Direct Drive Parameters

| Parameter | Hex      | Name                                                | Value                                                          | Default | Unit | Change Mode | Page                                    |
|-----------|----------|-----------------------------------------------------|----------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H32.00    | 2032-01h | Encoder interpolator mismatch alarm (E124)          | 0: Disabled<br>1: Enabled                                      | 1       | -    | At stop     | <a href="#">"H32_en.00" on page 446</a> |
| H32.01    | 2032-02h | Encoder interface switchover switch                 | 0: Default encoder interface<br>1: Switching encoder interface | 0       | -    | At stop     | <a href="#">"H32_en.01" on page 447</a> |
| H32.02    | 2032-03h | Angle auto-tuning upon power-on                     | 0: Disabled<br>1: Enabled                                      | 0       | -    | At stop     | <a href="#">"H32_en.02" on page 447</a> |
| H32.03    | 2032-04h | Angle auto-tuning switch controlled by control word | 0: Disabled<br>1: Control word 6<br>2: Control word 7          | 0       | -    | At stop     | <a href="#">"H32_en.03" on page 447</a> |

| Parameter | Hex      | Name                                                                      | Value                                                    | Default | Unit         | Change Mode | Page                                    |
|-----------|----------|---------------------------------------------------------------------------|----------------------------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H32.04    | 2032-05h | Angle auto-tuning state                                                   | bit0: bit7 of 6041<br>bit1: E602.9                       | 0       | -            | At stop     | <a href="#">"H32_en.04" on page 448</a> |
| H32.05    | 2032-06h | Pre-positioning retract selection                                         | 0: Disabled<br>1: Enabled                                | 0       | -            | At stop     | <a href="#">"H32_en.05" on page 448</a> |
| H32.06    | 2032-07h | Position feedback                                                         | 0: Disabled<br>1: Enabled                                | 0       | -            | At stop     | <a href="#">"H32_en.06" on page 448</a> |
| H32.07    | 2032-08h | Incremental homing method                                                 | 0: Z Signal short circuit<br>1: Only first short circuit | 1       | -            | At stop     | <a href="#">"H32_en.07" on page 449</a> |
| H32.08    | 2032-09h | Homing signal width                                                       | 100–65535                                                | 800     | -            | At stop     | <a href="#">"H32_en.08" on page 449</a> |
| H32.10    | 2032-0Bh | Max. reference current in angle auto-tuning through inching               | 10.0% to 300.0%                                          | 100.0   | %            | At stop     | <a href="#">"H32_en.10" on page 449</a> |
| H32.13    | 2032-0Eh | Motor operation threshold (ROT/DDR) in angle auto-tuning through inching  | 0.001deg to 20.000deg                                    | 0.200   | deg          | At stop     | <a href="#">"H32_en.13" on page 449</a> |
| H32.14    | 2032-0Fh | Motor standstill threshold (ROT/DDR) in angle auto-tuning through inching | 0.1[mm/s]/[rpm]–100.0[mm/s]/[rpm]                        | 1.0     | [mm/s]/[rpm] | At stop     | <a href="#">"H32_en.14" on page 450</a> |
| H32.15    | 2032-10h | Motor operation threshold (DDL) in angle auto-tuning through inching      | 0.001 millimeters–20.000 millimeters                     | 0.200   | mm           | At stop     | <a href="#">"H32_en.15" on page 450</a> |
| H32.16    | 2032-11h | Motor standstill threshold (DDL) in angle auto-tuning through inching     | 0.1 mm/s–100.0 mm/s                                      | 1.0     | mm/s         | At stop     | <a href="#">"H32_en.16" on page 450</a> |
| H32.18    | 2032-13h | Motor standstill threshold for inching angle auto-tuning                  | 0.1s to 10.0s                                            | 0.5     | s            | At stop     | <a href="#">"H32_en.18" on page 451</a> |

| Parameter | Hex      | Name                                                                                               | Value                                             | Default | Unit                | Change Mode | Page                                     |
|-----------|----------|----------------------------------------------------------------------------------------------------|---------------------------------------------------|---------|---------------------|-------------|------------------------------------------|
| H32.20    | 2032-15h | Max. reference current in angle auto-tuning through pre-positioning (closed-loop)                  | 10.0% to 300.0%                                   | 100.0   | %                   | At stop     | <a href="#">" H32_en.20" on page 451</a> |
| H32.22    | 2032-17h | Electrical angle reference in angle auto-tuning through pre-positioning (closed-loop)              | 0.0deg to 360.0deg                                | 0.0     | deg                 | At stop     | <a href="#">" H32_en.22" on page 451</a> |
| H32.23    | 2032-18h | Electrical angle reference change range in angle auto-tuning through pre-positioning (closed-loop) | 10.0deg to 170.0deg                               | 90.0    | deg                 | At stop     | <a href="#">" H32_en.23" on page 452</a> |
| H32.24    | 2032-19h | Motor stop threshold (ROT/DDR) in angle auto-tuning through pre-positioning (closed-loop)          | 0.1[mm/s]/[rpm]–100.0[mm/s]/[rpm]                 | 1.0     | [mm/s]/[rpm]        | At stop     | <a href="#">" H32_en.24" on page 452</a> |
| H32.25    | 2032-1Ah | Motor stop threshold (DDL) in angle auto-tuning through pre-positioning (closed-loop)              | 0.1 mm/s–100.0 mm/s                               | 1.0     | mm/s                | At stop     | <a href="#">" H32_en.25" on page 452</a> |
| H32.26    | 2032-1Bh | Damping in angle auto-tuning through pre-positioning (closed-loop)                                 | 0.00[N/(m/s)]/[N·m/rpm]–655.35[N/(m/s)]/[N·m/rpm] | 0.00    | [N/(m/s)]/[N·m/rpm] | At stop     | <a href="#">" H32_en.26" on page 452</a> |
| H32.29    | 2032-1Eh | Motor standstill threshold for close-loop pre-positioning angle auto-tuning                        | 0.1s to 10.0s                                     | 0.5     | s                   | At stop     | <a href="#">" H32_en.29" on page 453</a> |

| Parameter | Hex      | Name                                                                            | Value                                                        | Default | Unit         | Change Mode | Page                                    |
|-----------|----------|---------------------------------------------------------------------------------|--------------------------------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H32.30    | 2032-1Fh | Max. reference current in angle auto-tuning through position lock               | 10.0% to 300.0%                                              | 100.0   | %            | At stop     | <a href="#">"H32_en.30" on page 453</a> |
| H32.33    | 2032-22h | Motor operation threshold (ROT/DDR) in angle auto-tuning through position lock  | 0.001deg to 20.000deg                                        | 0.200   | deg          | At stop     | <a href="#">"H32_en.33" on page 453</a> |
| H32.34    | 2032-23h | Motor standstill threshold (ROT/DDR) in angle auto-tuning through position lock | 0.1[mm/s]/[rpm]–100.0[mm/s]/[rpm]                            | 1.0     | [mm/s]/[rpm] | At stop     | <a href="#">"H32_en.34" on page 454</a> |
| H32.35    | 2032-24h | Motor operation threshold (DDL) in angle auto-tuning through position lock      | 0.001 millimeters–20.000 millimeters                         | 0.200   | mm           | At stop     | <a href="#">"H32_en.35" on page 454</a> |
| H32.36    | 2032-25h | Motor standstill threshold (DDL) in angle auto-tuning through position lock     | 0.1 mm/s–100.0 mm/s                                          | 1.0     | mm/s         | At stop     | <a href="#">"H32_en.36" on page 454</a> |
| H32.37    | 2032-26h | Angle gain in angle auto-tuning through position lock                           | 0deg/(p/s)–10000deg/(p/s)                                    | 1000    | deg/(p/s)    | At stop     | <a href="#">"H32_en.37" on page 455</a> |
| H32.38    | 2032-27h | Inertia ratio in angle auto-tuning through position lock                        | 0.00–120.00                                                  | 0.00    | -            | At stop     | <a href="#">"H32_en.38" on page 455</a> |
| H32.39    | 2032-28h | Gain class in angle auto-tuning through position lock                           | 4level to 31level                                            | 16      | level        | At stop     | <a href="#">"H32_en.39" on page 455</a> |
| H32.40    | 2032-29h | Left/Right limit function                                                       | 1. Left limit being positive<br>2. Left limit being negative | 0       | -            | Real-time   | <a href="#">"H32_en.40" on page 456</a> |
| H32.41    | 2032-2Ah | Angle auto-tuning delay upon power-on                                           | 0 ms to 65535 ms                                             | 3       | ms           | Real-time   | <a href="#">"H32_en.41" on page 456</a> |

| Parameter | Hex      | Name                                                           | Value                           | Default | Unit         | Change Mode | Page                                    |
|-----------|----------|----------------------------------------------------------------|---------------------------------|---------|--------------|-------------|-----------------------------------------|
| H32.45    | 2032-2Eh | Black box channel                                              | 0–1                             | 0       | -            | At stop     | <a href="#">"H32_en.45" on page 456</a> |
| H32.50    | 2032-33h | 32-bit range compatibility                                     | 0–99                            | 1       | -            | At stop     | <a href="#">"H32_en.50" on page 457</a> |
| H32.53    | 2032-36h | Motor standstill threshold for position lock angle auto-tuning | 0.1s to 10.0s                   | 0.5     | s            | At stop     | <a href="#">"H32_en.53" on page 457</a> |
| H32.54    | 2032-37h | Hall auto-tuning selection                                     | 0–65535                         | 0       | -            | At stop     | <a href="#">"H32_en.54" on page 457</a> |
| H32.55    | 2032-38h | Hall signal UVW manual adjustment                              | 0–7                             | 0       | -            | At stop     | <a href="#">"H32_en.55" on page 457</a> |
| H32.56    | 2032-39h | UVW filter time of Hall signal                                 | 0 ms to 10 ms                   | 5       | ms           | Real-time   | <a href="#">"H32_en.56" on page 458</a> |
| H32.57    | 2032-3Ah | Hall closed-loop locked-rotor speed                            | 0[mm/s]/[rpm]–65535[mm/s]/[rpm] | 2       | [mm/s]/[rpm] | At stop     | <a href="#">"H32_en.57" on page 458</a> |
| H32.58    | 2032-3Bh | Hall closed-loop locked-rotor current                          | 0.0% to 300.0%                  | 120.0   | %            | At stop     | <a href="#">"H32_en.58" on page 458</a> |
| H32.59    | 2032-3Ch | Hall closed-loop locked-rotor window time                      | 0 ms to 2000 ms                 | 10      | ms           | At stop     | <a href="#">"H32_en.59" on page 459</a> |
| H32.60    | 2032-3Dh | Hall closed-loop inertia ratio                                 | 0.00–120.00                     | 0.00    | -            | At stop     | <a href="#">"H32_en.60" on page 459</a> |
| H32.61    | 2032-3Eh | Hall closed-loop rigidity                                      | 4–31                            | 16      | -            | At stop     | <a href="#">"H32_en.61" on page 459</a> |
| H32.62    | 2032-3Fh | Electrical angle save flag                                     | 0–65535                         | 0       | -            | Real-time   | <a href="#">"H32_en.62" on page 459</a> |
| H32.63    | 2032-40h | Hall1 electric angle                                           | 0–65535                         | 0       | -            | At stop     | <a href="#">"H32_en.63" on page 460</a> |
| H32.64    | 2032-41h | Hall2 electric angle                                           | 0–65535                         | 0       | -            | At stop     | <a href="#">"H32_en.64" on page 460</a> |
| H32.65    | 2032-42h | Hall3 electric angle                                           | 0–65535                         | 0       | -            | At stop     | <a href="#">"H32_en.65" on page 460</a> |
| H32.66    | 2032-43h | Hall4 electric angle                                           | 0–65535                         | 0       | -            | At stop     | <a href="#">"H32_en.66" on page 460</a> |
| H32.67    | 2032-44h | Hall5 electric angle                                           | 0–65535                         | 0       | -            | At stop     | <a href="#">"H32_en.67" on page 461</a> |

| Parameter | Hex      | Name                                                 | Value                                                                                                                                             | Default | Unit | Change Mode | Page                                     |
|-----------|----------|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|------------------------------------------|
| H32.68    | 2032-45h | Hall6 electric angle                                 | 0–65535                                                                                                                                           | 0       | -    | At stop     | <a href="#">" H32_en.68" on page 461</a> |
| H32.70    | 2032-47h | Motor overload protection mode                       | 0: Internal motor overload curve<br>1: External motor overload curve<br>2: Current limit overload protection<br>3: Hide motor overload protection | 0       | -    | At stop     | <a href="#">" H32_en.70" on page 461</a> |
| H32.73    | 2032-4Ah | Thermal threshold current of overload current limit  | 100.0% to 750.0%                                                                                                                                  | 115.0   | %    | At stop     | <a href="#">" H32_en.73" on page 462</a> |
| H32.74    | 2032-4Bh | Peak current of overload current limit               | 100.0% to 750.0%                                                                                                                                  | 300.0   | %    | At stop     | <a href="#">" H32_en.74" on page 462</a> |
| H32.75    | 2032-4Ch | Max. current duration of overload protection         | 0.01s to 655.35s                                                                                                                                  | 1.00    | s    | At stop     | <a href="#">" H32_en.75" on page 462</a> |
| H32.76    | 2032-4Dh | Current limit time constant of overload protection   | 0.01–655.35                                                                                                                                       | 1.00    | -    | At stop     | <a href="#">" H32_en.76" on page 463</a> |
| H32.77    | 2032-4Eh | Current limit alarm threshold of overload protection | 0.0% to 750.0%                                                                                                                                    | 0.0     | %    | At stop     | <a href="#">" H32_en.77" on page 463</a> |
| H32.78    | 2032-4Fh | Current limit fault threshold of overload protection | 0.0% to 750.0%                                                                                                                                    | 0.0     | %    | At stop     | <a href="#">" H32_en.78" on page 463</a> |
| H32.79    | 2032-50h | Thermal threshold current of overload                | 100.0% to 750.0%                                                                                                                                  | 115.0   | %    | At stop     | <a href="#">" H32_en.79" on page 463</a> |
| H32.80    | 2032-51h | Thermal current interval of overload                 | 0.1% to 204.8%                                                                                                                                    | 6.4     | %    | At stop     | <a href="#">" H32_en.80" on page 464</a> |
| H32.81    | 2032-52h | Overload heat dissipation current interval           | 0.1% to 204.8%                                                                                                                                    | 6.4     | %    | At stop     | <a href="#">" H32_en.81" on page 464</a> |

| Parameter | Hex      | Name                                      | Value | Default | Unit | Change Mode | Page                                    |
|-----------|----------|-------------------------------------------|-------|---------|------|-------------|-----------------------------------------|
| H32.82    | 2032-53h | Length of overload heat dissipation curve | 1–200 | 1       | -    | At stop     | <a href="#">"H32_en.82" on page 464</a> |
| H32.83    | 2032-54h | Length of overload heat dissipation curve | 1–200 | 1       | -    | At stop     | <a href="#">"H32_en.83" on page 464</a> |

## 1.30 H33 Compensation Parameters

| Parameter | Communication Address | Name                     | Value   | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|--------------------------|---------|---------|------|-------------|-----------------------------------------|
| H33.00    | 2033-01h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.00" on page 465</a> |
| H33.01    | 2033-02h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.01" on page 465</a> |
| H33.02    | 2033-03h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.02" on page 465</a> |
| H33.03    | 2033-04h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.03" on page 466</a> |
| H33.04    | 2033-05h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.04" on page 466</a> |
| H33.05    | 2033-06h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.05" on page 466</a> |
| H33.06    | 2033-07h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.06" on page 466</a> |
| H33.07    | 2033-08h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.07" on page 467</a> |
| H33.08    | 2033-09h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.08" on page 467</a> |
| H33.09    | 2033-0Ah              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.09" on page 467</a> |
| H33.10    | 2033-0Bh              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.10" on page 467</a> |
| H33.11    | 2033-0Ch              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.11" on page 468</a> |
| H33.12    | 2033-0Dh              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.12" on page 468</a> |
| H33.13    | 2033-0Eh              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.13" on page 468</a> |

| Parameter | Communication Address | Name                     | Value   | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|--------------------------|---------|---------|------|-------------|-----------------------------------------|
| H33.14    | 2033-0Fh              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.14" on page 469</a> |
| H33.15    | 2033-10h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.15" on page 469</a> |
| H33.16    | 2033-11h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.16" on page 469</a> |
| H33.17    | 2033-12h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.17" on page 469</a> |
| H33.18    | 2033-13h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.18" on page 470</a> |
| H33.19    | 2033-14h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.19" on page 470</a> |
| H33.20    | 2033-15h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.20" on page 470</a> |
| H33.21    | 2033-16h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.21" on page 470</a> |
| H33.22    | 2033-17h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.22" on page 471</a> |
| H33.23    | 2033-18h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.23" on page 471</a> |
| H33.24    | 2033-19h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.24" on page 471</a> |
| H33.25    | 2033-1Ah              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.25" on page 471</a> |
| H33.26    | 2033-1Bh              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.26" on page 472</a> |
| H33.27    | 2033-1Ch              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.27" on page 472</a> |
| H33.28    | 2033-1Dh              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.28" on page 472</a> |
| H33.29    | 2033-1Eh              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.29" on page 473</a> |
| H33.30    | 2033-1Fh              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.30" on page 473</a> |
| H33.31    | 2033-20h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.31" on page 473</a> |
| H33.32    | 2033-21h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.32" on page 473</a> |
| H33.33    | 2033-22h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.33" on page 474</a> |
| H33.34    | 2033-23h              | Compensation data BUFFER | 0–65535 | 0       | -    | At stop     | <a href="#">"H33_en.34" on page 474</a> |



| Parameter | Communication Address | Name                                                                        | Value                | Default | Unit  | Change Mode  | Page                                    |
|-----------|-----------------------|-----------------------------------------------------------------------------|----------------------|---------|-------|--------------|-----------------------------------------|
| H33.35    | 2033-24h              | Compensation data BUFFER                                                    | 0-65535              | 0       | -     | At stop      | <a href="#">"H33_en.35" on page 474</a> |
| H33.36    | 2033-25h              | Compensation data BUFFER                                                    | 0-65535              | 0       | -     | At stop      | <a href="#">"H33_en.36" on page 474</a> |
| H33.37    | 2033-26h              | Compensation data BUFFER                                                    | 0-65535              | 0       | -     | At stop      | <a href="#">"H33_en.37" on page 475</a> |
| H33.38    | 2033-27h              | Compensation data BUFFER                                                    | 0-65535              | 0       | -     | At stop      | <a href="#">"H33_en.38" on page 475</a> |
| H33.39    | 2033-28h              | Compensation data BUFFER                                                    | 0-65535              | 0       | -     | At stop      | <a href="#">"H33_en.39" on page 475</a> |
| H33.40    | 2033-29h              | Current Compensation BUFFER group number                                    | 0-65535              | 0       | -     | At stop      | <a href="#">"H33_en.40" on page 475</a> |
| H33.41    | 2033-2Ah              | Compensation data sum                                                       | 0-32767              | 0       | -     | At stop      | <a href="#">"H33_en.41" on page 476</a> |
| H33.44    | 2033-2Dh              | Data command                                                                | 0-1                  | 1       | -     | At stop      | <a href="#">"H33_en.44" on page 476</a> |
| H33.45    | 2033-2Eh              | Data storage position<br>0: Servo RAM<br>1: Servo FLASH<br>2: Encoder FLASH |                      | 1       | -     | At stop      | <a href="#">"H33_en.45" on page 476</a> |
| H33.46    | 2033-2Fh              | Data clear                                                                  | 0-3                  | 0       | -     | At stop      | <a href="#">"H33_en.46" on page 477</a> |
| H33.47    | 2033-30h              | Software tool write status                                                  | 0-2                  | 0       | -     | At stop      | <a href="#">"H33_en.47" on page 477</a> |
| H33.48    | 2033-31h              | Servo read status                                                           | 0-65535              | 0       | -     | Unchangeable | <a href="#">"H33_en.48" on page 477</a> |
| H33.49    | 2033-32h              | Software tool read status                                                   | 0-2                  | 0       | -     | At stop      | <a href="#">"H33_en.49" on page 477</a> |
| H33.50    | 2033-33h              | Servo write status                                                          | 0-2                  | 0       | -     | Unchangeable | <a href="#">"H33_en.50" on page 478</a> |
| H33.51    | 2033-34h              | Data transmission completed flag                                            | 0-1                  | 0       | -     | At stop      | <a href="#">"H33_en.51" on page 478</a> |
| H33.52    | 2033-35h              | Servo data transfer completed flag                                          | 0-1                  | 0       | -     | At stop      | <a href="#">"H33_en.52" on page 478</a> |
| H33.60    | 2033-3Dh              | Accuracy compensation function                                              | 0-1                  | 0       | -     | At stop      | <a href="#">"H33_en.60" on page 478</a> |
| H33.61    | 2033-3Eh              | Accuracy compensation sum                                                   | 0count to 65535count | 0       | count | At stop      | <a href="#">"H33_en.61" on page 479</a> |

| Parameter | Communication Address | Name                                                                            | Value                                        | Default | Unit         | Change Mode  | Page                                     |
|-----------|-----------------------|---------------------------------------------------------------------------------|----------------------------------------------|---------|--------------|--------------|------------------------------------------|
| H33.62    | 2033-3Fh              | Starting offset address of accuracy compensation                                | -21474836.48[mm]/[deg]–21474836.47[mm]/[deg] | 0.00    | [mm]/[deg]   | At stop      | <a href="#">" H33_en.62" on page 479</a> |
| H33.64    | 2033-41h              | Accuracy compensation data interval                                             | -327.67[mm]/[deg]–327.67[mm]/[deg]           | 0.00    | [mm]/[deg]   | At stop      | <a href="#">" H33_en.64" on page 479</a> |
| H33.65    | 2033-42h              | Accuracy compensation dial phase sequence                                       | 0–65535                                      | 0       | -            | At stop      | <a href="#">" H33_en.65" on page 480</a> |
| H33.66    | 2033-43h              | Accuracy compensation dial reference direction                                  | 0–1                                          | 0       | -            | At stop      | <a href="#">" H33_en.66" on page 480</a> |
| H33.67    | 2033-44h              | Servo homing completed                                                          | 0–65535                                      | 0       | -            | Unchangeable | <a href="#">" H33_en.67" on page 480</a> |
| H33.68    | 2033-45h              | Current acting index of accuracy compensation                                   | 0–65535                                      | 0       | -            | Unchangeable | <a href="#">" H33_en.68" on page 480</a> |
| H33.69    | 2033-46h              | Forced homing start                                                             | 0–1                                          | 0       | -            | At stop      | <a href="#">" H33_en.69" on page 481</a> |
| H33.70    | 2033-47h              | Forced homing mode                                                              | -32768–32767                                 | -2      | -            | At stop      | <a href="#">" H33_en.70" on page 481</a> |
| H33.71    | 2033-48h              | Forced homing at low speed                                                      | 0[mm/s]/[rpm]–1000[mm/s]/[rpm]               | 10      | [mm/s]/[rpm] | At stop      | <a href="#">" H33_en.71" on page 481</a> |
| H33.72    | 2033-49h              | Single-turn absolute position of accuracy compensation home of absolute encoder | 0p to 4294967295p                            | 0       | p            | At stop      | <a href="#">" H33_en.72" on page 481</a> |
| H33.74    | 2033-4Bh              | Min.pulse width of frequency-division output accuracy compensation              | 2count to 7count                             | 3       | count        | At stop      | <a href="#">" H33_en.74" on page 482</a> |

| Parameter | Communication Address | Name                                         | Value                              | Default | Unit  | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------------------|------------------------------------|---------|-------|-------------|-----------------------------------------|
| H33.75    | 2033-4Ch              | Accuracy compensation data unit              | 0: [um]/[arcsec]<br>1: [mm]/[mrad] | 0       | -     | At stop     | <a href="#">"H33_en.75" on page 482</a> |
| H33.81    | 2033-52h              | Motor cogging torque ripple compensation sum | 0count to 65535count               | 2000    | count | At stop     | <a href="#">"H33_en.81" on page 482</a> |

## 1.31 H34 Servo Motor Parameters 2

| Parameter | Communication Address | Name                                       | Value   | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|--------------------------------------------|---------|---------|------|--------------|-----------------------------------------|
| H34.12    | 2034-0Dh              | Error type supported by EnDat2.2 encoder   | 0–65535 | 0       | -    | Unchangeable | <a href="#">"H34_en.12" on page 483</a> |
| H34.13    | 2034-0Eh              | Alarm types supported by EnDat2.2 encoders | 0–65535 | 0       | -    | Unchangeable | <a href="#">"H34_en.13" on page 483</a> |
| H34.14    | 2034-0Fh              | Error value supported by EnDat2.2 encoder  | 0–65535 | 0       | -    | Unchangeable | <a href="#">"H34_en.14" on page 484</a> |
| H34.15    | 2034-10h              | Alarm values supported by EnDat2.2 encoder | 0–65535 | 0       | -    | Unchangeable | <a href="#">"H34_en.15" on page 484</a> |

## 1.32 List of 1000h Object Dictionary

| Parameter | Communication Address | Name                  | Value               | Default | Unit | Change Mode | Page                                |
|-----------|-----------------------|-----------------------|---------------------|---------|------|-------------|-------------------------------------|
| 1005h     | 1005h                 | SYNC message COB-ID   | 128–4294967295      | 128     | -    | Real-time   | <a href="#">"1005h" on page 485</a> |
| 1006h     | 1006h                 | Synchronization cycle | 0us to 2147483647us | 0       | us   | Real-time   | <a href="#">"1006h" on page 485</a> |
| 100Ch     | 100Ch                 | Node guarding time    | 0 ms–65535 ms       | 0       | ms   | Real-time   | <a href="#">"100Ch" on page 486</a> |

| Parameter | Communication Address | Name                       | Value         | Default    | Unit | Change Mode | Page                                      |
|-----------|-----------------------|----------------------------|---------------|------------|------|-------------|-------------------------------------------|
| 100dh     | 100dh                 | Life factor                | 0–255         | 0          | -    | Real-time   | <a href="#">"100dh" on page 486</a>       |
| 1014h     | 1014h                 | Emergency message COB-ID   | 0–4294967295  | 128        | -    | Real-time   | <a href="#">"1014h" on page 486</a>       |
| 1016.01h  | 1016-01h              | Consumer heartbeat time 1  | 0–2147483647  | 0          | -    | Real-time   | <a href="#">"1016_en.01h" on page 487</a> |
| 1016.02h  | 1016-02h              | Consumer heartbeat time 2  | 0–2147483647  | 0          | -    | Real-time   | <a href="#">"1016_en.02h" on page 487</a> |
| 1016.03h  | 1016-03h              | Consumer heartbeat time 3  | 0–2147483647  | 0          | -    | Real-time   | <a href="#">"1016_en.03h" on page 487</a> |
| 1016.04h  | 1016-04h              | Consumer heartbeat time 4  | 0–2147483647  | 0          | -    | Real-time   | <a href="#">"1016_en.04h" on page 487</a> |
| 1016.05h  | 1016-05h              | Consumer heartbeat time 5  | 0–2147483647  | 0          | -    | Real-time   | <a href="#">"1016_en.05h" on page 488</a> |
| 1017h     | 1017h                 | Producer heartbeat time    | 0 ms–65535 ms | 0          | ms   | Real-time   | <a href="#">"1017h" on page 488</a>       |
| 1400.01h  | 1400-01h              | COB-ID of RPDO1            | 0–4294967295  | 512        | -    | Real-time   | <a href="#">"1400_en.01h" on page 488</a> |
| 1400.02h  | 1400-02h              | Transmission type of RPDO1 | 0–255         | 255        | -    | Real-time   | <a href="#">"1400_en.02h" on page 489</a> |
| 1401.01h  | 1401-01h              | COB-ID of RPDO2            | 0–4294967295  | 768        | -    | Real-time   | <a href="#">"1401_en.01h" on page 489</a> |
| 1401.02h  | 1401-02h              | Transmission type of RPDO2 | 0–255         | 255        | -    | Real-time   | <a href="#">"1401_en.02h" on page 489</a> |
| 1402.01h  | 1402-01h              | COB-ID of RPDO3            | 0–4294967295  | 2147484672 | -    | Real-time   | <a href="#">"1402_en.01h" on page 490</a> |
| 1402.02h  | 1402-02h              | Transmission type of RPDO3 | 0–255         | 255        | -    | Real-time   | <a href="#">"1402_en.02h" on page 490</a> |
| 1403.01h  | 1403-01h              | COB-ID of RPDO4            | 0–4294967295  | 2147484928 | -    | Real-time   | <a href="#">"1403_en.01h" on page 490</a> |
| 1403.02h  | 1403-02h              | Transmission type of RPDO4 | 0–255         | 255        | -    | Real-time   | <a href="#">"1403_en.02h" on page 490</a> |

| Parameter | Communication Address | Name                                    | Value        | Default    | Unit | Change Mode | Page                                      |
|-----------|-----------------------|-----------------------------------------|--------------|------------|------|-------------|-------------------------------------------|
| 1600.00h  | 1600-00h              | Number of valid mapped objects in RPDO1 | 0–8          | 3          | -    | Real-time   | <a href="#">"1600_en.00h" on page 491</a> |
| 1600.01h  | 1600-01h              | Mapped object 1 in RPDO1                | 0–2147483647 | 1614807056 | -    | Real-time   | <a href="#">"1600_en.01h" on page 491</a> |
| 1600.02h  | 1600-02h              | Mapped object 2 in RPDO1                | 0–2147483647 | 1627324448 | -    | Real-time   | <a href="#">"1600_en.02h" on page 491</a> |
| 1600.03h  | 1600-03h              | Mapped object 3 in RPDO1                | 0–2147483647 | 1616904200 | -    | Real-time   | <a href="#">"1600_en.03h" on page 492</a> |
| 1600.04h  | 1600-04h              | Mapped object 4 in RPDO1                | 0–2147483647 | 0          | -    | Real-time   | <a href="#">"1600_en.04h" on page 492</a> |
| 1600.05h  | 1600-05h              | Mapped object 5 in RPDO1                | 0–2147483647 | 0          | -    | Real-time   | <a href="#">"1600_en.05h" on page 492</a> |
| 1600.06h  | 1600-06h              | Mapped object 6 in RPDO1                | 0–2147483647 | 0          | -    | Real-time   | <a href="#">"1600_en.06h" on page 492</a> |
| 1600.07h  | 1600-07h              | Mapped object 7 in RPDO1                | 0–2147483647 | 0          | -    | Real-time   | <a href="#">"1600_en.07h" on page 493</a> |
| 1600.08h  | 1600-08h              | Mapped object 8 in RPDO1                | 0–2147483647 | 0          | -    | Real-time   | <a href="#">"1600_en.08h" on page 493</a> |
| 1601.00h  | 1601-00h              | Number of valid mapped objects in RPDO2 | 0–8          | 2          | -    | Real-time   | <a href="#">"1601_en.00h" on page 493</a> |
| 1601.01h  | 1601-01h              | Mapped object 1 in RPDO2                | 0–2147483647 | 1618608160 | -    | Real-time   | <a href="#">"1601_en.01h" on page 494</a> |
| 1601.02h  | 1601-02h              | Mapped object 2 in RPDO2                | 0–2147483647 | 1619066912 | -    | Real-time   | <a href="#">"1601_en.02h" on page 494</a> |
| 1601.03h  | 1601-03h              | Mapped object 3 in RPDO2                | 0–2147483647 | 0          | -    | Real-time   | <a href="#">"1601_en.03h" on page 494</a> |
| 1601.04h  | 1601-04h              | Mapped object 4 in RPDO2                | 0–2147483647 | 0          | -    | Real-time   | <a href="#">"1601_en.04h" on page 495</a> |

| Parameter | Communication Address | Name                                    | Value        | Default | Unit | Change Mode | Page                                      |
|-----------|-----------------------|-----------------------------------------|--------------|---------|------|-------------|-------------------------------------------|
| 1601.05h  | 1601-05h              | Mapped object 5 in RPDO2                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1601_en.05h" on page 495</a> |
| 1601.06h  | 1601-06h              | Mapped object 6 in RPDO2                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1601_en.06h" on page 495</a> |
| 1601.07h  | 1601-07h              | Mapped object 7 in RPDO2                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1601_en.07h" on page 495</a> |
| 1601.08h  | 1601-08h              | Mapped object 8 in RPDO2                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1601_en.08h" on page 496</a> |
| 1602.00h  | 1602-00h              | Number of valid mapped objects in RPDO3 | 0–8          | 0       | -    | Real-time   | <a href="#">"1602_en.00h" on page 496</a> |
| 1602.01h  | 1602-01h              | Mapped object 1 in RPDO3                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1602_en.01h" on page 496</a> |
| 1602.02h  | 1602-02h              | Mapped object 2 in RPDO3                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1602_en.02h" on page 497</a> |
| 1602.03h  | 1602-03h              | Mapped object 3 in RPDO3                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1602_en.03h" on page 497</a> |
| 1602.04h  | 1602-04h              | Mapped object 4 in RPDO3                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1602_en.04h" on page 497</a> |
| 1602.05h  | 1602-05h              | Mapped object 5 in RPDO3                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1602_en.05h" on page 497</a> |
| 1602.06h  | 1602-06h              | Mapped object 6 in RPDO3                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1602_en.06h" on page 498</a> |
| 1602.07h  | 1602-07h              | Mapped object 7 in RPDO3                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1602_en.07h" on page 498</a> |
| 1602.08h  | 1602-08h              | Mapped object 8 in RPDO3                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1602_en.08h" on page 498</a> |
| 1603.00h  | 1603-00h              | Number of valid mapped objects in RPDO4 | 0–8          | 0       | -    | Real-time   | <a href="#">"1603_en.00h" on page 498</a> |

| Parameter | Communication Address | Name                       | Value         | Default    | Unit  | Change Mode | Page                                      |
|-----------|-----------------------|----------------------------|---------------|------------|-------|-------------|-------------------------------------------|
| 1603.01h  | 1603-01h              | Mapped object 1 in RPDO4   | 0–2147483647  | 0          | -     | Real-time   | <a href="#">"1603_en.01h" on page 499</a> |
| 1603.02h  | 1603-02h              | Mapped object 2 in RPDO4   | 0–2147483647  | 0          | -     | Real-time   | <a href="#">"1603_en.02h" on page 499</a> |
| 1603.03h  | 1603-03h              | Mapped object 3 in RPDO4   | 0–2147483647  | 0          | -     | Real-time   | <a href="#">"1603_en.03h" on page 499</a> |
| 1603.04h  | 1603-04h              | Mapped object 4 in RPDO4   | 0–2147483647  | 0          | -     | Real-time   | <a href="#">"1603_en.04h" on page 500</a> |
| 1603.05h  | 1603-05h              | Mapped object 5 in RPDO4   | 0–2147483647  | 0          | -     | Real-time   | <a href="#">"1603_en.05h" on page 500</a> |
| 1603.06h  | 1603-06h              | Mapped object 6 in RPDO4   | 0–2147483647  | 0          | -     | Real-time   | <a href="#">"1603_en.06h" on page 500</a> |
| 1603.07h  | 1603-07h              | Mapped object 7 in RPDO4   | 0–2147483647  | 0          | -     | Real-time   | <a href="#">"1603_en.07h" on page 501</a> |
| 1603.08h  | 1603-08h              | Mapped object 8 in RPDO4   | 0–2147483647  | 0          | -     | Real-time   | <a href="#">"1603_en.08h" on page 501</a> |
| 1800.01h  | 1800-01h              | COB-ID of TPDO1            | 0–4294967295  | 1073742208 | -     | Real-time   | <a href="#">"1800_en.01h" on page 501</a> |
| 1800.02h  | 1800-02h              | Transmission type of TPDO1 | 0–255         | 255        | -     | Real-time   | <a href="#">"1800_en.02h" on page 502</a> |
| 1800.03h  | 1800-03h              | Inhibit time of TPDO1      | 0–65535       | 500        | 100us | Real-time   | <a href="#">"1800_en.03h" on page 502</a> |
| 1800.05h  | 1800-05h              | Event counter of TPDO1     | 0 ms–65535 ms | 0          | ms    | Real-time   | <a href="#">"1800_en.05h" on page 502</a> |
| 1801.01h  | 1801-01h              | COB-ID of TPDO2            | 0–4294967295  | 1073742464 | -     | Real-time   | <a href="#">"1801_en.01h" on page 502</a> |
| 1801.02h  | 1801-02h              | Transmission type of TPDO2 | 0–255         | 255        | -     | Real-time   | <a href="#">"1801_en.02h" on page 503</a> |
| 1801.03h  | 1801-03h              | Inhibit time of TPDO2      | 0–65535       | 500        | 100us | Real-time   | <a href="#">"1801_en.03h" on page 503</a> |
| 1801.05h  | 1801-05h              | Event counter of TPDO2     | 0 ms–65535 ms | 0          | ms    | Real-time   | <a href="#">"1801_en.05h" on page 503</a> |
| 1802.01h  | 1802-01h              | COB-ID of TPDO3            | 0–4294967295  | 3221226368 | -     | Real-time   | <a href="#">"1802_en.01h" on page 504</a> |

| Parameter | Communication Address | Name                                    | Value         | Default    | Unit  | Change Mode | Page                                      |
|-----------|-----------------------|-----------------------------------------|---------------|------------|-------|-------------|-------------------------------------------|
| 1802.02h  | 1802-02h              | Transmission type of TPDO3              | 0–255         | 255        | -     | Real-time   | <a href="#">"1802_en.02h" on page 504</a> |
| 1802.03h  | 1802-03h              | Inhibit time of TPDO3                   | 0–65535       | 500        | 100us | Real-time   | <a href="#">"1802_en.03h" on page 504</a> |
| 1802.05h  | 1802-05h              | Event counter of TPDO3                  | 0 ms–65535 ms | 0          | ms    | Real-time   | <a href="#">"1802_en.05h" on page 504</a> |
| 1803.01h  | 1803-01h              | COB-ID of TPDO4                         | 0–4294967295  | 3221226624 | -     | Real-time   | <a href="#">"1803_en.01h" on page 505</a> |
| 1803.02h  | 1803-02h              | Transmission type of TPDO4              | 0–255         | 255        | -     | Real-time   | <a href="#">"1803_en.02h" on page 505</a> |
| 1803.03h  | 1803-03h              | Inhibit time of TPDO4                   | 0–65535       | 500        | 100us | Real-time   | <a href="#">"1803_en.03h" on page 505</a> |
| 1803.05h  | 1803-05h              | Event counter of TPDO4                  | 0 ms–65535 ms | 0          | ms    | Real-time   | <a href="#">"1803_en.05h" on page 505</a> |
| 1A00.00h  | 1A00-00h              | Number of valid mapped objects in TPDO1 | 0–8           | 3          | -     | Real-time   | <a href="#">"1A00_en.00h" on page 506</a> |
| 1A00.01h  | 1A00-01h              | Mapped object 1 in TPDO1                | 0–2147483647  | 1614872592 | -     | Real-time   | <a href="#">"1A00_en.01h" on page 506</a> |
| 1A00.02h  | 1A00-02h              | Mapped object 2 in TPDO1                | 0–2147483647  | 1627193376 | -     | Real-time   | <a href="#">"1A00_en.02h" on page 506</a> |
| 1A00.03h  | 1A00-03h              | Mapped object 3 in TPDO1                | 0–2147483647  | 1616969736 | -     | Real-time   | <a href="#">"1A00_en.03h" on page 507</a> |
| 1A00.04h  | 1A00-04h              | Mapped object 4 in TPDO1                | 0–2147483647  | 0          | -     | Real-time   | <a href="#">"1A00_en.04h" on page 507</a> |
| 1A00.05h  | 1A00-05h              | Mapped object 5 in TPDO1                | 0–2147483647  | 0          | -     | Real-time   | <a href="#">"1A00_en.05h" on page 507</a> |
| 1A00.06h  | 1A00-06h              | Mapped object 6 in TPDO1                | 0–2147483647  | 0          | -     | Real-time   | <a href="#">"1A00_en.06h" on page 507</a> |
| 1A00.07h  | 1A00-07h              | Mapped object 7 in TPDO1                | 0–2147483647  | 0          | -     | Real-time   | <a href="#">"1A00_en.07h" on page 508</a> |



| Parameter | Communication Address | Name                                    | Value        | Default        | Unit | Change Mode | Page                                      |
|-----------|-----------------------|-----------------------------------------|--------------|----------------|------|-------------|-------------------------------------------|
| 1A00.08h  | 1A00-08h              | Mapped object 8 in TPD01                | 0–2147483647 | 0              | -    | Real-time   | <a href="#">"1A00_en.08h" on page 508</a> |
| 1A01.00h  | 1A01-00h              | Number of valid mapped objects in TPD02 | 0–8          | 2              | -    | Real-time   | <a href="#">"1A01_en.00h" on page 508</a> |
| 1A01.01h  | 1A01-01h              | Mapped object 1 in TPD02                | 0–2147483647 | 16171663<br>68 | -    | Real-time   | <a href="#">"1A01_en.01h" on page 509</a> |
| 1A01.02h  | 1A01-02h              | Mapped object 2 in TPD02                | 0–2147483647 | 16176906<br>56 | -    | Real-time   | <a href="#">"1A01_en.02h" on page 509</a> |
| 1A01.03h  | 1A01-03h              | Mapped object 3 in TPD02                | 0–2147483647 | 0              | -    | Real-time   | <a href="#">"1A01_en.03h" on page 509</a> |
| 1A01.04h  | 1A01-04h              | Mapped object 4 in TPD02                | 0–2147483647 | 0              | -    | Real-time   | <a href="#">"1A01_en.04h" on page 510</a> |
| 1A01.05h  | 1A01-05h              | Mapped object 5 in TPD02                | 0–2147483647 | 0              | -    | Real-time   | <a href="#">"1A01_en.05h" on page 510</a> |
| 1A01.06h  | 1A01-06h              | Mapped object 6 in TPD02                | 0–2147483647 | 0              | -    | Real-time   | <a href="#">"1A01_en.06h" on page 510</a> |
| 1A01.07h  | 1A01-07h              | Mapped object 7 in TPD02                | 0–2147483647 | 0              | -    | Real-time   | <a href="#">"1A01_en.07h" on page 510</a> |
| 1A01.08h  | 1A01-08h              | Mapped object 8 in TPD02                | 0–2147483647 | 0              | -    | Real-time   | <a href="#">"1A01_en.08h" on page 511</a> |
| 1A02.00h  | 1A02-00h              | Number of valid mapped objects in TPD03 | 0–8          | 0              | -    | Real-time   | <a href="#">"1A02_en.00h" on page 511</a> |
| 1A02.01h  | 1A02-01h              | Mapped object 1 in TPD03                | 0–2147483647 | 0              | -    | Real-time   | <a href="#">"1A02_en.01h" on page 511</a> |
| 1A02.02h  | 1A02-02h              | Mapped object 2 in TPD03                | 0–2147483647 | 0              | -    | Real-time   | <a href="#">"1A02_en.02h" on page 512</a> |

| Parameter | Communication Address | Name                                    | Value        | Default | Unit | Change Mode | Page                                      |
|-----------|-----------------------|-----------------------------------------|--------------|---------|------|-------------|-------------------------------------------|
| 1A02.03h  | 1A02-03h              | Mapped object 3 in TPDO3                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1A02_en.03h" on page 512</a> |
| 1A02.04h  | 1A02-04h              | Mapped object 4 in TPDO3                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1A02_en.04h" on page 512</a> |
| 1A02.05h  | 1A02-05h              | Mapped object 5 in TPDO3                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1A02_en.05h" on page 512</a> |
| 1A02.06h  | 1A02-06h              | Mapped object 6 in TPDO3                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1A02_en.06h" on page 513</a> |
| 1A02.07h  | 1A02-07h              | Mapped object 7 in TPDO3                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1A02_en.07h" on page 513</a> |
| 1A02.08h  | 1A02-08h              | Mapped object 8 in TPDO3                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1A02_en.08h" on page 513</a> |
| 1A03.00h  | 1A03-00h              | Number of valid mapped objects in TPDO4 | 0–8          | 0       | -    | Real-time   | <a href="#">"1A03_en.00h" on page 513</a> |
| 1A03.01h  | 1A03-01h              | Mapped object 1 in TPDO4                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1A03_en.01h" on page 514</a> |
| 1A03.02h  | 1A03-02h              | Mapped object 2 in TPDO4                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1A03_en.02h" on page 514</a> |
| 1A03.03h  | 1A03-03h              | Mapped object 3 in TPDO4                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1A03_en.03h" on page 514</a> |
| 1A03.04h  | 1A03-04h              | Mapped object 4 in TPDO4                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1A03_en.04h" on page 515</a> |
| 1A03.05h  | 1A03-05h              | Mapped object 5 in TPDO4                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1A03_en.05h" on page 515</a> |
| 1A03.06h  | 1A03-06h              | Mapped object 6 in TPDO4                | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1A03_en.06h" on page 515</a> |

| Parameter | Communication Address | Name                     | Value        | Default | Unit | Change Mode | Page                                      |
|-----------|-----------------------|--------------------------|--------------|---------|------|-------------|-------------------------------------------|
| 1A03.07h  | 1A03-07h              | Mapped object 7 in TPDO4 | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1A03_en.07h" on page 516</a> |
| 1A03.08h  | 1A03-08h              | Mapped object 8 in TPDO4 | 0–2147483647 | 0       | -    | Real-time   | <a href="#">"1A03_en.08h" on page 516</a> |

### 1.33 List of 6000h Object Dictionary

| Parameter | Communication Address | Name            | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Default | Unit | Change Mode  | Page                                |
|-----------|-----------------------|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|--------------|-------------------------------------|
| 603Fh     | 603Fh                 | Error code      | 0–65535                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0       | -    | Unchangeable | <a href="#">"603Fh" on page 516</a> |
| 6040h     | 6040h                 | Control word    | 0–65535                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0       | -    | Real-time    | <a href="#">"6040h" on page 517</a> |
| 6041h     | 6041h                 | Status word     | 0–65535                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0       | -    | Unchangeable | <a href="#">"6041h" on page 517</a> |
| 605Ah     | 605Ah                 | Quick stop mode | 0: Coast to stop, keeping de-energized state<br>1: Ramp to stop as defined by 6084h/609Ah (HM), keeping de-energized state<br>2: Ramp to stop as defined by 6085h, keeping de-energized state<br>3: Stop at emergency stop torque, keeping de-energized state<br>5: Ramp to stop as defined by 6084h/609Ah (HM), keeping position lock state<br>6: Ramp to stop as defined by 6085h, keeping position lock state<br>7: Stop at emergency stop torque, keeping position lock state | 2       | -    | Real-time    | <a href="#">"605Ah" on page 517</a> |

| Parameter | Communication Address | Name               | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Default | Unit | Change Mode | Page                                |
|-----------|-----------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-------------------------------------|
| 605Ch     | 605Ch                 | Stop mode at S-OFF | –4: Ramp to stop as defined by 6085h, keeping dynamic braking state<br>–3: Stop at zero speed, keeping dynamic braking state<br>–2: Ramp to stop as defined by 6084h/ 609Ah, keeping dynamic braking state<br>–1: Dynamic braking stop, keeping dynamic braking state<br>0: Coast to stop, keeping de-energized state<br>1: Ramp to stop as defined by 6084h/ 609Ah, keeping de-energized state<br>2: Dynamic braking stop, keeping de-energized state | 0       | -    | Real-time   | <a href="#">"605Ch" on page 518</a> |
| 605Dh     | 605Dh                 | Halt mode          | 1: Ramp to stop as defined by 6084h/ 609Ah (HM), keeping position lock state<br>2: Ramp to stop as defined by 6085h, keeping position lock state<br>3: Stop at emergency stop torque, keeping position lock state                                                                                                                                                                                                                                      | 1       | -    | Real-time   | <a href="#">"605Dh" on page 518</a> |

| Parameter | Communication Address | Name                     | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Default   | Unit           | Change Mode  | Page                                |
|-----------|-----------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------------|--------------|-------------------------------------|
| 605Eh     | 605Eh                 | Stop mode at No. 2 fault | -5: Stop at zero speed, keeping dynamic braking state<br>-4: Stop at emergency stop torque, keeping dynamic braking state<br>-3: Ramp to stop as defined by 6085h, keeping dynamic braking state<br>-2: Ramp to stop as defined by 6084h/ 609Ah (HM), keeping dynamic braking state<br>-1: Dynamic braking stop, keeping dynamic braking state<br>0: Coast to stop, keeping de-energized state<br>1: Ramp to stop as defined by 6084h/ 609Ah (HM), keeping de-energized state<br>2: Ramp to stop as defined by 6085h, keeping de-energized state<br>3: Stop at emergency stop torque, keeping de-energized state<br>4: Dynamic braking stop, keeping de-energized state | 2         | -              | Real-time    | <a href="#">"605Eh" on page 519</a> |
| 6060h     | 6060h                 | Servo drive mode         | 1: Profile position mode (pp)<br>3: Profile velocity mode (pv)<br>4: Profile torque mode (pt)<br>6: Homing mode (hm)<br>7: Interpolation mode (ip)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0         | -              | Real-time    | <a href="#">"6060h" on page 519</a> |
| 6061h     | 6061h                 | Operation mode display   | 1: Profile position mode (pp)<br>3: Profile velocity mode (pv)<br>4: Profile torque mode (pt)<br>6: Homing mode (hm)<br>7: Interpolation mode (ip)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0         | -              | Unchangeable | <a href="#">"6061h" on page 520</a> |
| 6062h     | 6062h                 | Position reference       | -2147483648 to 2147483647                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0         | Reference unit | Unchangeable | <a href="#">"6062h" on page 521</a> |
| 6063h     | 6063h                 | Position actual value    | -2147483648 to +2147483647                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0         | Pulse          | Unchangeable | <a href="#">"6063h" on page 521</a> |
| 6064h     | 6064h                 | Position actual value    | -2147483648 to 2147483647                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0         | Reference unit | Unchangeable | <a href="#">"6064h" on page 521</a> |
| 6065h     | 6065h                 | Following error window   | 0 to 4294967295                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 219895614 | Reference unit | Real-time    | <a href="#">"6065h" on page 522</a> |

| Parameter | Communication Address | Name                                                                     | Value                      | Default     | Unit             | Change Mode  | Page                                      |
|-----------|-----------------------|--------------------------------------------------------------------------|----------------------------|-------------|------------------|--------------|-------------------------------------------|
| 6066h     | 6066h                 | Defines the time lapse to trigger excessive position deviation (EB00.0). | 0 ms to 65535 ms           | 0           | ms               | Real-time    | <a href="#">"6066h" on page 522</a>       |
| 6067h     | 6067h                 | Position window                                                          | 0 to 4294967295            | 46976       | Reference unit   | Real-time    | <a href="#">"6067h" on page 522</a>       |
| 6068h     | 6068h                 | Position window time                                                     | 0 ms to 65535 ms           | 0           | ms               | Real-time    | <a href="#">"6068h" on page 523</a>       |
| 606Ch     | 606Ch                 | Actual speed                                                             | -2147483648 to +2147483647 | 0           | Reference unit/s | Unchangeable | <a href="#">"606Ch" on page 523</a>       |
| 606Dh     | 606Dh                 | Velocity window                                                          | 0 RPM to 65535 RPM         | 10          | RPM              | Real-time    | <a href="#">"606Dh" on page 523</a>       |
| 606Eh     | 606Eh                 | Velocity window time                                                     | 0 ms to 65535 ms           | 0           | ms               | Real-time    | <a href="#">"606Eh" on page 524</a>       |
| 606Fh     | 606Fh                 | Zero speed signal threshold                                              | 0 RPM to 65535 RPM         | 10          | RPM              | Real-time    | <a href="#">"606Fh" on page 524</a>       |
| 6070h     | 6070h                 | Velocity threshold time                                                  | 0 ms to 65535 ms           | 0           | ms               | Real-time    | <a href="#">"6070h" on page 525</a>       |
| 6071h     | 6071h                 | Target torque                                                            | -4000–4000                 | 0           | 0.001            | Real-time    | <a href="#">"6071h" on page 525</a>       |
| 6072h     | 6072h                 | Max. torque reference                                                    | 0–4000                     | 3500        | 0.001            | Real-time    | <a href="#">"6072h" on page 526</a>       |
| 6074h     | 6074h                 | Torque reference                                                         | -4000–4000                 | 0           | 0.001            | Unchangeable | <a href="#">"6074h" on page 526</a>       |
| 6077h     | 6077h                 | Actual torque                                                            | -4000–4000                 | 0           | 0.001            | Unchangeable | <a href="#">"6077h" on page 526</a>       |
| 607Ah     | 607Ah                 | Target position                                                          | -2147483648 to 2147483647  | 0           | Reference unit   | Real-time    | <a href="#">"607Ah" on page 527</a>       |
| 607Ch     | 607Ch                 | Home offset                                                              | -2147483648 to 2147483647  | 0           | Reference unit   | Real-time    | <a href="#">"607Ch" on page 527</a>       |
| 607D.01h  | 607D-01h              | Min. position limit                                                      | -2147483648 to 2147483647  | -2147483648 | Reference unit   | Real-time    | <a href="#">"607D_en.01h" on page 528</a> |

| Parameter | Communication Address | Name                           | Value                     | Default    | Unit                          | Change Mode | Page                                      |
|-----------|-----------------------|--------------------------------|---------------------------|------------|-------------------------------|-------------|-------------------------------------------|
| 607D.02h  | 607D-02h              | Max. position limit            | -2147483648 to 2147483647 | 2147483647 | Reference unit                | Real-time   | <a href="#">"607D_en.02h" on page 528</a> |
| 607Eh     | 607Eh                 | Reference polarity             | 0–255                     | 0          | -                             | Real-time   | <a href="#">"607Eh" on page 528</a>       |
| 607Fh     | 607Fh                 | Max. speed                     | 0 to 4294967295           | 4294967295 | Reference unit/s              | Real-time   | <a href="#">"607Fh" on page 529</a>       |
| 6081h     | 6081h                 | Profile velocity               | 0 to 4294967295           | 111848106  | Reference unit/s              | Real-time   | <a href="#">"6081h" on page 529</a>       |
| 6083h     | 6083h                 | Profile acceleration           | 0 to 4294967295           | 4294967295 | Reference unit/s <sup>2</sup> | Real-time   | <a href="#">"6083h" on page 529</a>       |
| 6084h     | 6084h                 | Profile deceleration           | 0 to 4294967295           | 4294967295 | Reference unit/s <sup>2</sup> | Real-time   | <a href="#">"6084h" on page 530</a>       |
| 6085h     | 6085h                 | Quick stop deceleration        | 0 to 4294967295           | 2147483647 | Reference unit/s <sup>2</sup> | Real-time   | <a href="#">"6085h" on page 530</a>       |
| 6087h     | 6087h                 | Torque slope                   | 0–4294967295              | 4294967295 | 0.1%/s                        | Real-time   | <a href="#">"6087h" on page 531</a>       |
| 6091.01h  | 6091-01h              | Motor resolution               | 1–4294967295              | 1          | -                             | At stop     | <a href="#">"6091_en.01h" on page 531</a> |
| 6091.02h  | 6091-02h              | Shaft resolution               | 1–4294967295              | 1          | -                             | At stop     | <a href="#">"6091_en.02h" on page 531</a> |
| 6098h     | 6098h                 | Homing method                  | -3–35                     | 1          | -                             | Real-time   | <a href="#">"6098h" on page 532</a>       |
| 6099.01h  | 6099-01h              | Speed during search for switch | 0 to 4294967295           | 111848106  | Reference unit/s              | At stop     | <a href="#">"6099_en.01h" on page 533</a> |
| 6099.02h  | 6099-02h              | Speed during search for zero   | 0 to 4294967295           | 11184810   | Reference unit/s              | At stop     | <a href="#">"6099_en.02h" on page 533</a> |
| 609Ah     | 609Ah                 | Homing acceleration            | 0 to 4294967295           | 4294967295 | Reference unit/s <sup>2</sup> | Real-time   | <a href="#">"609Ah" on page 534</a>       |
| 60B8h     | 60B8h                 | Touch probe function           | 0–65535                   | 0          | -                             | Real-time   | <a href="#">"60B8h" on page 534</a>       |

| Parameter | Communication Address | Name                                       | Value                     | Default    | Unit                          | Change Mode  | Page                                      |
|-----------|-----------------------|--------------------------------------------|---------------------------|------------|-------------------------------|--------------|-------------------------------------------|
| 60B9h     | 60B9h                 | Touch probe status                         | 0–65535                   | 0          | -                             | Unchangeable | <a href="#">"60B9h" on page 535</a>       |
| 60BAh     | 60BAh                 | Touch probe 1 positive edge position value | -2147483648 to 2147483647 | 0          | Reference unit                | Unchangeable | <a href="#">"60BAh" on page 536</a>       |
| 60BBh     | 60BBh                 | Touch probe 1 negative edge position value | -2147483648 to 2147483647 | 0          | Reference unit                | Unchangeable | <a href="#">"60BBh" on page 537</a>       |
| 60BCh     | 60BCh                 | Touch probe 2 positive edge position value | -2147483648 to 2147483647 | 0          | Reference unit                | Unchangeable | <a href="#">"60BCh" on page 537</a>       |
| 60BDh     | 60BDh                 | Touch probe 2 negative edge position value | -2147483648 to 2147483647 | 0          | Reference unit                | Unchangeable | <a href="#">"60BDh" on page 537</a>       |
| 60C1.01h  | 60C1-01h              | Interpolation displacement                 | -2147483648 to 2147483647 | 0          | Reference unit                | Real-time    | <a href="#">"60C1_en.01h" on page 538</a> |
| 60C2.01h  | 60C2-01h              | Interpolation time period                  | 1–20                      | 1          | -                             | Real-time    | <a href="#">"60C2_en.01h" on page 538</a> |
| 60C2.02h  | 60C2-02h              | Interpolation time units                   | -3–3                      | -3         | -                             | Real-time    | <a href="#">"60C2_en.02h" on page 538</a> |
| 60C5h     | 60C5h                 | Max. acceleration                          | 0 to 4294967295           | 4294967295 | Reference unit/s <sup>2</sup> | Real-time    | <a href="#">"60C5h" on page 539</a>       |
| 60C6h     | 60C6h                 | Max. deceleration                          | 0 to 4294967295           | 4294967295 | Reference unit/s <sup>2</sup> | Real-time    | <a href="#">"60C6h" on page 539</a>       |
| 60D5h     | 60D5h                 | Touch probe 1 positive edge counter        | 0–65535                   | 0          | -                             | Unchangeable | <a href="#">"60D5h" on page 539</a>       |



| Parameter | Communication Address | Name                                | Value                       | Default | Unit             | Change Mode  | Page                                      |
|-----------|-----------------------|-------------------------------------|-----------------------------|---------|------------------|--------------|-------------------------------------------|
| 60D6h     | 60D6h                 | Touch probe 1 negative edge counter | 0–65535                     | 0       | -                | Unchangeable | <a href="#">"60D6h" on page 539</a>       |
| 60D7h     | 60D7h                 | Touch probe 2 positive edge counter | 0–65535                     | 0       | -                | Unchangeable | <a href="#">"60D7h" on page 540</a>       |
| 60D8h     | 60D8h                 | Touch probe 2 negative edge counter | 0–65535                     | 0       | -                | Unchangeable | <a href="#">"60D8h" on page 540</a>       |
| 60E0h     | 60E0h                 | Positive torque limit               | 0–4000                      | 3500    | 0.001            | Real-time    | <a href="#">"60E0h" on page 540</a>       |
| 60E1h     | 60E1h                 | Negative torque limit               | 0–4000                      | 3500    | 0.001            | Real-time    | <a href="#">"60E1h" on page 541</a>       |
| 60F4h     | 60F4h                 | Position deviation                  | -2147483648 to 2147483647   | 0       | Reference unit   | Unchangeable | <a href="#">"60F4h" on page 541</a>       |
| 60FCh     | 60FCh                 | Position reference                  | -2147483648p to 2147483647p | 0       | p                | Unchangeable | <a href="#">"60FCh" on page 541</a>       |
| 60FDh     | 60FDh                 | DI state                            | 0–4294967295                | 0       | -                | Unchangeable | <a href="#">"60FDh" on page 541</a>       |
| 60FFh     | 60FFh                 | PV target velocity                  | –2147483648 to +2147483647  | 0       | Reference unit/s | Real-time    | <a href="#">"60FFh" on page 542</a>       |
| 60FE.01h  | 60FE-01h              | Physical output                     | 0–4294967295                | 0       | -                | Real-time    | <a href="#">"60FE_en.01h" on page 543</a> |
| 60FE.02h  | 60FE-02h              | Bitmask                             | 0–4294967295                | 0       | -                | Real-time    | <a href="#">"60FE_en.02h" on page 543</a> |

## 2 Description of Parameters [P]

### 2.1 H00 Servo Motor Parameters

#### Note

For the EnDat2.2 or SSI encoder, see H34 for the related encoder parameters.

|               |                                                            |          |                                        |
|---------------|------------------------------------------------------------|----------|----------------------------------------|
| <b>H00.00</b> | <b>Motor SN</b>                                            |          |                                        |
|               | Hex:                                                       | 2000-01h | Effective mode: Upon the next power-on |
|               | Min.:                                                      | 0        | Unit: -                                |
|               | Max.:                                                      | 65535    | Data Type: UInt16                      |
|               | Default:                                                   | 14102    | Change: At stop                        |
|               | <b>Value Range:</b>                                        |          |                                        |
|               | 20000: Linear motor-pulse encoder                          |          |                                        |
|               | 14203: Linear motor-BissC encoder                          |          |                                        |
|               | 14206: Linear motor-SSI encoder                            |          |                                        |
|               | 14207: Linear motor-Endat2.2 encoder                       |          |                                        |
|               | 14202: Linear motor-Inovance 23-bit encoder                |          |                                        |
|               | 14205: Linear motor-Inovance interpolator 23-bit encoder   |          |                                        |
|               | 20001: DDR motor-Pulse encoder                             |          |                                        |
|               | 14210: DDR motor-Inovance interpolator 23-bit encoder      |          |                                        |
|               | 14201: DDR motor-Inovance 23-bit encoder                   |          |                                        |
|               | 14211: DDR motor-BissC encoder                             |          |                                        |
|               | 14212: DDR motor-Endat2.2 encoder                          |          |                                        |
|               | 14213: DDR motor-SSI encoder                               |          |                                        |
|               | 20002: Rotary motor-Pulse encoder                          |          |                                        |
|               | 14000: Rotary Motor-Inovance communication 20-bit encoder  |          |                                        |
|               | 14101: Rotary motor-Inovance 23-bit encoder                |          |                                        |
|               | 14102: Rotary motor-Inovance 26-bit encoder                |          |                                        |
|               | 14020: Rotary motor-Harmonic 20-bit encoder-2.5M baud rate |          |                                        |
|               | 14021: Rotary motor-Harmonic 17-bit encoder-2.5M baud rate |          |                                        |

14022: Rotary motor-Harmonic 17-bit encoder-4M baud rate  
14120: Rotary motor-Nikon 20-bit encoder-2.5M baud rate  
14121: Rotary motor-Nikon 17-bit encoder-2.5M baud rate  
14122: Rotary motor-Nikon 17-bit encoder-4M baud rate  
14130: Rotary motor-Tamagawa 17-bit encoder  
14131: Rotary motor-Tamagawa 23-bit encoder  
14140: Rotary motor-Endat2.2 encoder  
14150: Rotary motor-SSI encoder  
14160: Rotary motor-BissC encoder

**Description**

-

**H00.02****Customized No.**

|          |               |                 |              |
|----------|---------------|-----------------|--------------|
| Hex:     | 2000-03h      | Effective mode: | -            |
| Min.:    | 0.00          | Unit:           | -            |
| Max.:    | 4294967295.00 | Data Type:      | UInt32       |
| Default: | 0.00          | Change:         | Unchangeable |

**Value Range:**

0.00–4294967295.00

**Description**

Differentiates the customized MCU software version, which is not applicable to standard models.

**H00.04****Encoder version**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2000-05h | Effective mode: | -            |
| Min.:    | 0.0      | Unit:           | -            |
| Max.:    | 6553.5   | Data Type:      | UInt16       |
| Default: | 0.0      | Change:         | Unchangeable |

**Value Range:**

0.0–6553.5

**Description**

Saved in the encoder and used to differentiate the encoder software version.

**H00.05****Serial-type motor code**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2000-06h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Displays the code of the serial-type motor, which is determined by the motor model and unchangeable.

**H00.06****FPGA customized SN**

Hex: 2000-07h

Effective -

mode:

Min.: 0.00

Unit: -

Max.: 655.35

Data Type: UInt16

Default: 0.00

Change: Unchangeable

**Value Range:**

0.00–655.35

**Description**

Differentiates the customized FPGA software version, which is not applicable to standard models.

**H00.07****STO version**

Hex: 2000-08h

Effective -

mode:

Min.: 0.0

Unit: -

Max.: 6553.5

Data Type: UInt16

Default: 0.0

Change: Unchangeable

**Value Range:**

0.0–6553.5

**Description**

Display the software version number of STO function.

**H00.08****Bus encoder type**

Hex: 2000-09h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0–65535

**Description**

14100: Multi-turn absolute encoder

Others: Single-turn absolute encoder

**H00.14 Rated speed**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-0Fh | Effective mode: | Upon the next power-on |
| Min.:    | 50       | Unit:           | [mm/s]/[rpm]           |
| Max.:    | 10000    | Data Type:      | UInt16                 |
| Default: | 3000     | Change:         | At stop                |

**Value Range:**

50[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H00.15 Maximum speed**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-10h | Effective mode: | Upon the next power-on |
| Min.:    | 50       | Unit:           | [mm/s]/[rpm]           |
| Max.:    | 10000    | Data Type:      | UInt16                 |
| Default: | 6000     | Change:         | At stop                |

**Value Range:**

50[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H00.18 Stator resistance**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-13h | Effective mode: | Upon the next power-on |
| Min.:    | 0.001    | Unit:           | $\Omega$               |
| Max.:    | 65.535   | Data Type:      | UInt16                 |
| Default: | 0.500    | Change:         | At stop                |

**Value Range:**0.001 $\Omega$  to 65.535 $\Omega$ **Description**

-

**H00.19 Stator inductance Lq**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-14h | Effective mode: | Upon the next power-on |
| Min.:    | 0.01     | Unit:           | mH                     |
| Max.:    | 655.35   | Data Type:      | UInt16                 |
| Default: | 3.27     | Change:         | At stop                |

**Value Range:**

0.01mH–655.35mH

**Description**

-

**H00.20****Stator inductance Ld**

Hex: 2000-15h

Effective Upon the next power-on

mode:

Min.: 0.01

Unit: mH

Max.: 655.35

Data Type: UInt16

Default: 3.87

Change: At stop

**Value Range:**

0.01mH–655.35mH

**Description**

-

**H00.22****Torque coefficient Kt**

Hex: 2000-17h

Effective Upon the next power-on

mode:

Min.: 0.01

Unit: [N/Arms]/[N·m/Arms]

Max.: 655.35

Data Type: UInt16

Default: 0.51

Change: At stop

**Value Range:**

0.01[N/Arms]/[N·m/Arms]–655.35[N/Arms]/[N·m/Arms]

**Description**

-

**H00.40****Motor control type**

Hex: 2000-29h

Effective Upon the next power-on

mode:

Min.: 0

Unit: -

Max.: 3

Data Type: UInt16

Default: 2

Change: Real-time

**Value Range:**

0: General-purpose rotary motor (ROT)

1: Direct drive rotary motor (DDR)

2: Direct drive linear motor (DDL)

3: Voice coil motor (VOL)

**Description**

The motor type supported by the drive.

0: General-purpose rotary motor (ROT)

1: Direct drive rotary motor (DDR)

2: Direct drive linear motor (DDL)

3: Voice coil motor (VOL)

**H00.41 Master encoder configuration**

|                     |          |                 |              |
|---------------------|----------|-----------------|--------------|
| Hex:                | 2000-2Ah | Effective mode: | -            |
| Min.:               | 0        | Unit:           | -            |
| Max.:               | 1        | Data Type:      | UInt16       |
| Default:            | 1        | Change:         | Unchangeable |
| <b>Value Range:</b> |          |                 |              |
| 0: CN2              |          |                 |              |
| 1: CN7              |          |                 |              |
| <b>Description</b>  |          |                 |              |
| -                   |          |                 |              |

**H00.43 BiSSC/SSI/ENDAT data length**

|                                                                                               |          |                 |                        |
|-----------------------------------------------------------------------------------------------|----------|-----------------|------------------------|
| Hex:                                                                                          | 2000-2Ch | Effective mode: | Upon the next power-on |
| Min.:                                                                                         | 0        | Unit:           | -                      |
| Max.:                                                                                         | 40       | Data Type:      | UInt16                 |
| Default:                                                                                      | 32       | Change:         | At stop                |
| <b>Value Range:</b>                                                                           |          |                 |                        |
| 0–40                                                                                          |          |                 |                        |
| <b>Description</b>                                                                            |          |                 |                        |
| Defines the length (up to 32 bits) of the data configured based on BiSS-C/SSI/ENDAT protocol. |          |                 |                        |

**H00.44 Number of BiSS-C/SSI fault bits**

|                                                                          |          |                 |                        |
|--------------------------------------------------------------------------|----------|-----------------|------------------------|
| Hex:                                                                     | 2000-2Dh | Effective mode: | Upon the next power-on |
| Min.:                                                                    | 0        | Unit:           | -                      |
| Max.:                                                                    | 31       | Data Type:      | UInt16                 |
| Default:                                                                 | 2        | Change:         | At stop                |
| <b>Value Range:</b>                                                      |          |                 |                        |
| 0–31                                                                     |          |                 |                        |
| <b>Description</b>                                                       |          |                 |                        |
| Defines the length of the fault configured based on BiSS-C/SSI protocol. |          |                 |                        |

**H00.45 Encoder pitch 1**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-2Eh | Effective mode: | Upon the next power-on |
| Min.:    | 0.01     | Unit:           | [mm]/[deg]             |
| Max.:    | 655.35   | Data Type:      | UInt16                 |
| Default: | 2.00     | Change:         | At stop                |

**Value Range:**

0.01[mm]/[deg]–655.35[mm]/[deg]

**Description**

Defines the encoder pitch characteristics, which should be used together with encoder pitch fluctuation suppressor 1 (see details in H08.90).

**H00.46****Encoder pitch 2**

Hex: 2000-2Fh

Effective mode: Upon the next power-on

Min.: 0.01

Unit: [mm]/[deg]

Max.: 655.35

Data Type: UInt16

Default: 0.50

Change: At stop

**Value Range:**

0.01[mm]/[deg]–655.35[mm]/[deg]

**Description**

Defines the encoder pitch characteristics, which should be used together with encoder pitch fluctuation suppressor 2 (see details in H08.90).

**H00.47****Encoder Type**

Hex: 2000-30h

Effective mode: Upon the next power-on

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0: Optical scale

1: Magnetic scale

**Description**

Pulse Encoder type:

0: Optical scale

1: Magnetic scale

**H00.48****Linear motor pole pitch (N-S)**

Hex: 2000-31h

Effective mode: Upon the next power-on

Min.: 0.00

Unit: mm

Max.: 655.35

Data Type: UInt16

Default: 16.00

Change: At stop

**Value Range:**

0.00 mm–655.35 mm



**Description**

Linear motor pole pitch.

**H00.49 Direct drive motor encoder resolution**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-32h | Effective mode: | Upon the next power-on |
| Min.:    | 0.000    | Unit:           | um/p                   |
| Max.:    | 65.535   | Data Type:      | UInt16                 |
| Default: | 1.000    | Change:         | At stop                |

**Value Range:**

0.000um/p–65.535um/p

**Description**

Direct drive motor encoder resolution.

**H00.54 BiSS/SSI CRC**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-37h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 1        | Change:         | At stop                |

**Value Range:**

0–1

**Description**

Defines the CRC polarity of the BiSS-C/SSI protocol.

0: Positive

1: Negative

**H00.55 Rated torque**

|          |             |                 |                        |
|----------|-------------|-----------------|------------------------|
| Hex:     | 2000-38h    | Effective mode: | Upon the next power-on |
| Min.:    | 0.00        | Unit:           | [N]/[N·m]              |
| Max.:    | 42949672.95 | Data Type:      | UInt32                 |
| Default: | 2.00        | Change:         | At stop                |

**Value Range:**

0.00[N]/[N·m]–42949672.95[N]/[N·m]

**Description**

-

**H00.57 Max. torque**

|      |          |                 |                        |
|------|----------|-----------------|------------------------|
| Hex: | 2000-3Ah | Effective mode: | Upon the next power-on |
|------|----------|-----------------|------------------------|

|          |             |            |           |
|----------|-------------|------------|-----------|
| Min.:    | 0.00        | Unit:      | [N]/[N·m] |
| Max.:    | 42949672.95 | Data Type: | UInt32    |
| Default: | 7.00        | Change:    | At stop   |

**Value Range:**

0.00[N]/[N·m]–42949672.95[N]/[N·m]

**Description**

-

**H00.59 Encoder counting direction**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-3Ch | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 65535    | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Forward

1: Reverse

**Description**

Motor phase sequence:

0: Forward

1: Reverse

**H00.63 Maximum motor current**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-40h | Effective mode: | Upon the next power-on |
| Min.:    | 0.00     | Unit:           | A                      |
| Max.:    | 65535.00 | Data Type:      | UInt32                 |
| Default: | 3.00     | Change:         | At stop                |

**Value Range:**

0.00 A–65535.00 A

**Description**

-

**H00.65 Motor rated current**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-42h | Effective mode: | Upon the next power-on |
| Min.:    | 0.00     | Unit:           | A                      |
| Max.:    | 65535.00 | Data Type:      | UInt32                 |
| Default: | 1.00     | Change:         | At stop                |

**Value Range:**

0.00 A–65535.00 A

**Description**

-

**H00.67****Moment of inertia**

|          |             |                 |                                 |
|----------|-------------|-----------------|---------------------------------|
| Hex:     | 2000-44h    | Effective mode: | Upon the next power-on          |
| Min.:    | 0.00000     | Unit:           | [g]/[0.00001kgcm <sup>2</sup> ] |
| Max.:    | 42949.67295 | Data Type:      | UInt32                          |
| Default: | 0.00001     | Change:         | At stop                         |

**Value Range:**0.00000[g]/[0.00001kgcm<sup>2</sup>]-42949.67295[g]/[0.00001kgcm<sup>2</sup>]**Description**

-

**H00.69****Linear back EMF coefficient**

|          |             |                 |                        |
|----------|-------------|-----------------|------------------------|
| Hex:     | 2000-46h    | Effective mode: | Upon the next power-on |
| Min.:    | 0.00        | Unit:           | [V/(m/s)]/[100mV/rpm]  |
| Max.:    | 42949672.95 | Data Type:      | UInt32                 |
| Default: | 33.00       | Change:         | At stop                |

**Value Range:**

0.00[V/(m/s)]/[100mV/rpm]-42949672.95[V/(m/s)]/[100mV/rpm]

**Description**

-

## 2.2 H01 Servo Drive Parameters

**H01.00****MCU software version**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2001-01h | Effective mode: | -            |
| Min.:    | 0.0      | Unit:           | -            |
| Max.:    | 6553.5   | Data Type:      | UInt16       |
| Default: | 0.0      | Change:         | Unchangeable |

**Value Range:**

0.0-6553.5

**Description**

Displays MCU software version (with one decimal place).

**H01.01****FPGA software version**

|      |          |                 |   |
|------|----------|-----------------|---|
| Hex: | 2001-02h | Effective mode: | - |
|------|----------|-----------------|---|

|          |        |            |              |
|----------|--------|------------|--------------|
| Min.:    | 0.0    | Unit:      | -            |
| Max.:    | 6553.5 | Data Type: | UInt16       |
| Default: | 0.0    | Change:    | Unchangeable |

**Value Range:**

0.0–6553.5

**Description**

Display the FPGA software version, with 1 decimal place.

**H01.02****Servo drive series No.**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2001-03h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Display servo drive serial number, with 0 decimal place.

**H01.06****Board software version**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2001-07h | Effective mode: | -            |
| Min.:    | 0.0      | Unit:           | -            |
| Max.:    | 6553.5   | Data Type:      | UInt16       |
| Default: | 0.0      | Change:         | Unchangeable |

**Value Range:**

0.0–6553.5

**Description**

Display board software version number, with 1 decimal place.

**H01.10****Drive series No.**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2001-0Bh | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 65535    | Data Type:      | UInt16                 |
| Default: | 3        | Change:         | At stop                |

**Value Range:**

2: S1R6  
3: S2R8  
5: S5R5  
6: S7R6  
7: S012  
8: S018  
9: S022  
10: S027  
10001: T3R5  
10002: T5R4  
10003: T8R4  
10004: T012  
10005: T017  
10006: T021  
10007: T026

**Description**

Displays the drive series number, with no decimal place.

**H01.11 DC-AC voltage class**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2001-0Ch | Effective mode: | -            |
| Min.:    | 0        | Unit:           | V            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 220      | Change:         | Unchangeable |

**Value Range:**

0 V–65535 V

**Description**

Display inverter voltage level, with 0 decimal place.

**H01.12 Drive rated power**

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 2001-0Dh    | Effective mode: | -            |
| Min.:    | 0.00        | Unit:           | kW           |
| Max.:    | 42949672.95 | Data Type:      | UInt32       |
| Default: | 0.40        | Change:         | Unchangeable |

**Value Range:**

0.00 kW–42949672.95kW

**Description**

Display the rated power of the drive, with 2 decimal places.

**H01.14 Max. output power of the drive**

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 2001-0Fh    | Effective mode: | -            |
| Min.:    | 0.00        | Unit:           | kW           |
| Max.:    | 42949672.95 | Data Type:      | UInt32       |
| Default: | 0.40        | Change:         | Unchangeable |

**Value Range:**

0.00 kW–42949672.95kW

**Description**

Displays the maximum output power of the drive, with 2 decimal places.

**H01.16 Rated output current of the drive**

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 2001-11h    | Effective mode: | -            |
| Min.:    | 0.00        | Unit:           | A            |
| Max.:    | 42949672.95 | Data Type:      | UInt32       |
| Default: | 2.80        | Change:         | Unchangeable |

**Value Range:**

0.00 A–42949672.95 A

**Description**

Displays the rated output current of the drive, with 2 decimal places.

**H01.18 Max. output current of the drive**

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 2001-13h    | Effective mode: | -            |
| Min.:    | 0.00        | Unit:           | A            |
| Max.:    | 42949672.95 | Data Type:      | UInt32       |
| Default: | 10.10       | Change:         | Unchangeable |

**Value Range:**

0.00 A–42949672.95 A

**Description**

Displays the maximum output current of the drive, with 2 decimal places.

**H01.40 DC bus overvoltage protection threshold**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2001-29h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | V         |
| Max.:    | 2000     | Data Type:      | UInt16    |
| Default: | 420      | Change:         | Real-time |

**Value Range:**

0 V–2000 V

**Description**

Displays DC bus overvoltage protection threshold, with 0 decimal place.

**H01.75      Current loop amplification factor**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2001-4Ch | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | -         |
| Max.:    | 655.35   | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | Real-time |

**Value Range:**

0.00–655.35

**Description**

Displays current loop amplification coefficient, with 2 decimal places.

**H01.88      Junction temperature parameter version 1**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2001-59h | Effective mode: | -            |
| Min.:    | 0.0      | Unit:           | -            |
| Max.:    | 6553.5   | Data Type:      | UInt16       |
| Default: | 0.0      | Change:         | Unchangeable |

**Value Range:**

0.0–6553.5

**Description**

Displays version 1 of the junction temperature parameter.

**H01.89      Junction temperature parameter version 2**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2001-5Ah | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Displays version 2 of the junction temperature parameter.

## 2.3 H02 Basic Control Parameters

### H02.00 Control mode

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-01h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 8        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

#### Value Range:

- 0: Speed control mode
- 1: Position control mode
- 2: Torque control mode
- 3: Torque/Speed control mode
- 4: Speed/Position control mode
- 5: Torque/Position control mode
- 6: Torque/Speed/Position compound mode
- 7: Process segment
- 8: CANopen mode

#### Description

- 0: Speed control mode
- 1: Position control mode
- 2: Torque control mode
- 3: Torque/Speed control mode
- 4: Speed/Position control mode
- 5: Torque/Position control mode
- 6: Torque/Speed/Position compound mode
- 7: Process segment
- 8: CANopen mode

### H02.01 Absolute system selection

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2002-02h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 4        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

#### Value Range:

- 0: Incremental mode
- 1: Absolute position linear mode
- 2: Absolute position rotation mode
- 3: Absolute position linear mode (without encoder overflow warning)
- 4: Absolute position single-turn mode



**Description**

Used to set the absolute position function.

**H02.02**

**Rotation direction selection**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2002-03h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

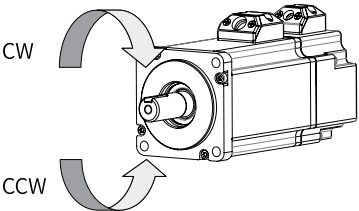
0: Counterclockwise (CCW) as forward direction

1: Clockwise (CW) as forward direction

**Description**

Defines the forward direction of the motor when viewed from the motor shaft side.

| Value | Rotating direction                          | Remarks                                                                                                                                                                             |
|-------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0     | Counterclockwise (CCW) as forward direction | Defines the CCW direction as the forward direction when a forward run command is received, indicating the motor rotates in the CCW direction when viewed from the motor shaft side. |
| 1     | Counterclockwise (CW) as forward direction  | When a forward command is input, the motor rotates in CW direction viewed from the motor shaft side, that is, the motor rotates clockwise.                                          |



**H02.03**

**Output pulse phase**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2002-04h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

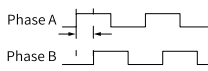
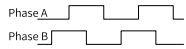
**Value Range:**

0: Phase A leads phase B

1: Phase A lags behind phase B

### Description

Defines the relationship between phase A and phase B on the condition that the motor direction of rotation remains unchanged when pulse output is enabled.

| Value | Output pulse phase     | Remarks                                                                                                                                                        |
|-------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0     | Phase A leads phase B. | Phase A leads phase B by 90° in encoder frequency-division output pulses.<br> |
| 1     | Phase A lags phase B.  | Phase A lags phase B by 90° in encoder frequency-division output pulses.<br>  |

### H02.05 Stop mode at S-ON OFF

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-06h | Effective mode: | At stop   |
| Min.:    | -4       | Unit:           | -         |
| Max.:    | 2        | Data Type:      | Int16     |
| Default: | 0        | Change:         | Real-time |

#### Value Range:

- 4: Stop based on ramp 2, keeping dynamic braking state
- 3: Stop at zero speed, keeping dynamic braking state
- 2: Stop based on ramp 1, keeping dynamic braking state
- 1: Dynamic braking stop, keeping dynamic braking state
- 0: Coast to stop, keeping de-energized state
- 1: Stop based on ramp 1, keeping de-energized state
- 2: Dynamic braking stop, keeping de-energized state

### Description

Defines the deceleration mode of the motor for stopping rotating upon S-ON OFF and the motor status after stop.

Note: If the brake is enabled, H02.05 is forced to -4: Ramp to stop as defined by 6085h, keeping dynamic braking state.

### H02.06 Stop mode at No.2 fault

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-07h | Effective mode: | At stop   |
| Min.:    | -5       | Unit:           | -         |
| Max.:    | 4        | Data Type:      | Int16     |
| Default: | 2        | Change:         | Real-time |

**Value Range:**

- 5: Stop at zero speed, keeping dynamic braking state
- 4: Stop at emergency stop torque, keeping dynamic braking state
- 3: Stop based on ramp 2, keeping dynamic braking state
- 2: Stop based on ramp 1, keeping dynamic braking state
- 1: Dynamic braking stop, keeping dynamic braking state
- 0: Coast to stop, keeping de-energized state
- 1: Stop based on ramp 1, keeping de-energized state
- 2: Stop based on ramp 2, keeping de-energized state
- 3: Stop at emergency stop torque, keeping de-energized state
- 4: Dynamic braking stop, keeping de-energized state

**Description**

Defines the deceleration mode of the servo motor for stopping rotating and the servo motor status when a No. 2 fault occurs.

Note: If the brake is enabled, H02.06 is forced to -3: Ramp to stop as defined by 6085h, keeping dynamic braking state.

**H02.07**

**Stop mode at overtravel**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-08h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 7        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

- 0: Coast to stop, keeping de-energized state
- 1: Stop at zero speed, keeping position lock state
- 2: Stop at zero speed, keeping de-energized state
- 3: Stop based on ramp 2, keeping de-energized state
- 4: Stop based on ramp 2, keeping position lock state
- 5: Dynamic braking stop, keeping de-energized state
- 6: Dynamic braking stop, keeping dynamic braking state
- 7: Not responding to overtravel

**Description**

Defines the deceleration mode of the servo motor for stopping rotating and the servo motor status when overtravel occurs.

Note: When H02.07 is set to 7 (Not responding to overtravel), some PLC may stop sending position references to stop the drive.

Note: After the brake function is enabled, H02.07 will be forcibly set to "4: Ramp to stop as defined by 6085h, keeping position lock state".

**H02.08 Stop mode at No.1 fault**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2002-09h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 2        | Data Type: | UInt16    |
| Default: | 2        | Change:    | At stop   |

**Value Range:**

0: Coast to stop, keeping de-energized state

1: Dynamic braking stop, keeping de-energized state

2: Dynamic braking stop, keeping dynamic braking state

**Description**

Defines the deceleration mode of the servo motor for stopping rotating and the servo motor status when a No. 1 fault occurs.

Note: After the brake function is enabled, H02.08 will be forcibly set to "2: Dynamic braking stop, keeping dynamic braking state".

**H02.09 Delay from brake output ON to command received**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2002-0Ah | Effective  | At stop   |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | ms        |
| Max.:    | 500      | Data Type: | UInt16    |
| Default: | 250      | Change:    | Real-time |

**Value Range:**

0 ms to 500 ms

**Description**

Defines the delay from the moment the brake output signal is ON to the moment the servo drive starts to receive commands after power-on.

**H02.10 Delay from brake output OFF to motor de-energized**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2002-0Bh | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 50       | Unit:      | ms        |
| Max.:    | 1000     | Data Type: | UInt16    |
| Default: | 150      | Change:    | Real-time |

**Value Range:**

50 ms to 1000 ms

**Description**

Defines the delay from the moment brake output is OFF to the moment when the motor at standstill enters the de-energized status.

**H02.11 Motor speed threshold at brake output OFF in rotation state**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2002-0Ch | Effective mode: | Real time    |
| Min.:    | 20       | Unit:           | [mm/s]/[rpm] |
| Max.:    | 3000     | Data Type:      | UInt16       |
| Default: | 30       | Change:         | Real-time    |

**Value Range:**

20[mm/s]/[rpm]–3000[mm/s]/[rpm]

**Description**

Defines the motor speed threshold when brake (BK) output is OFF in the rotating state.

**H02.12 Delay from S-ON OFF to brake output OFF in rotation state**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-0Dh | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 500      | Change:         | Real-time |

**Value Range:**

1 ms to 65535 ms

**Description**

Sets the delay time from BK OFF to S-ON OFF when the motor is in rotating state.

**H02.15 LED warning display**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-10h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Output warning information immediately

1: Not output warning information

**Description**

Defines whether to switch the keypad to the fault display mode when a No. 3 fault occurs.

**H02.16 Brake enable switch**

|       |          |                 |         |
|-------|----------|-----------------|---------|
| Hex:  | 2002-11h | Effective mode: | At stop |
| Min.: | 0        | Unit:           | -       |

|          |   |            |           |
|----------|---|------------|-----------|
| Max.:    | 1 | Data Type: | UInt16    |
| Default: | 0 | Change:    | Real-time |

**Value Range:**

0: OFF

1: ON

**Description**

Turn on or off the brake function.

**H02.17 Stop mode upon main circuit power failure**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-12h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 3        | Data Type:      | UInt16    |
| Default: | 2        | Change:         | Real-time |

**Value Range:**

0: Keep current action

1: Stop upon fault as defined by H02.06

2: Stop at S-ON OFF as defined by H02.05

3: Stop quickly as defined by H02.18

**Description**

Defines the stop mode of the motor for stopping rotating upon main circuit power failure.

**H02.18 Quick stop mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-13h | Effective mode: | At stop   |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 7        | Data Type:      | UInt16    |
| Default: | 2        | Change:         | Real-time |

**Value Range:**

0: Coast to stop, keeping de-energized state

1: Stop by ramp 1, keeping de-energized state

2: Stop by ramp 2, keeping de-energized state

3: Stop at emergency stop torque, keeping de-energized state

5: Stop by ramp 1, keeping position lock state

6: Stop by ramp 2, keeping position lock state

7: Stop at emergency stop torque, keeping position lock state

**Description**

Defines the deceleration mode of the motor for stopping rotating upon quick stop and the motor status after stop.

Note: When the brake function is enabled and the value of H02.18 is lower than 4, the stop mode is forcibly set to "2: Ramp to stop as defined by 6085h, keeping de-energized state".

#### **H02.21 Permissible minimum resistance of regenerative resistor**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2002-16h | Effective mode: | -            |
| Min.:    | 1        | Unit:           | $\Omega$     |
| Max.:    | 1000     | Data Type:      | UInt16       |
| Default: | 40       | Change:         | Unchangeable |

##### **Value Range:**

1 $\Omega$  to 1000 $\Omega$

##### **Description**

-

#### **H02.22 Power of built-in regenerative resistor**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2002-17h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | W            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 50       | Change:         | Unchangeable |

##### **Value Range:**

0 W–65535W

##### **Description**

The power of the built-in regenerative resistor is only related to the servo drive model, which is unmodifiable.

#### **H02.23 Resistance of built-in regenerative resistor**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2002-18h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | $\Omega$     |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 50       | Change:         | Unchangeable |

##### **Value Range:**

0 $\Omega$  to 65535 $\Omega$

##### **Description**

The resistance of the built-in regenerative resistor is only related to the servo drive model, which is unmodifiable.

Table 2-1 Specifications of the regenerative resistor

| Servo Drive Model | Specifications of Built-in Regenerative Resistor |                |                              | Min. Permissible<br>Resistance of External<br>Regenerative Resistor<br>(Ω)<br>(H02.21) |
|-------------------|--------------------------------------------------|----------------|------------------------------|----------------------------------------------------------------------------------------|
|                   | Resistance (Ω)                                   | Power (Pr) (W) | Processing Power (Pa)<br>(W) |                                                                                        |
| SV680*S1R6I-*INT  | -                                                | -              | -                            | 40                                                                                     |
| SV680*S2R8I-*INT  | -                                                | -              | -                            |                                                                                        |
| SV680*S5R5I-*INT  | 50                                               | 50             | 40                           |                                                                                        |
| SV680*S7R6I-*INT  | 25                                               | 80             | 64                           | 20                                                                                     |
| SV680*S012I-*INT  |                                                  |                |                              | 15                                                                                     |
| SV680*S018I-*INT  | 20                                               | 100            | 80                           | 20                                                                                     |
| SV680*S022I-*INT  |                                                  |                |                              |                                                                                        |
| SV680*S027I-*INT  |                                                  |                |                              |                                                                                        |
| SV680*T5R4I-*INT  | 100                                              | 80             | 64                           | 60                                                                                     |
| SV680*T8R4I-*INT  | 50                                               |                |                              | 45                                                                                     |
| SV680*T012I-*INT  |                                                  |                |                              | 40                                                                                     |
| SV680*T017I-*INT  | 35                                               | 100            | 80                           | 35                                                                                     |
| SV680*T021I-*INT  |                                                  |                |                              | 25                                                                                     |
| SV680*T026I-*INT  |                                                  |                |                              |                                                                                        |

**H02.24 Resistor heat dissipation coefficient**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-19h | Effective mode: | Real time |
| Min.:    | 10       | Unit:           | %         |
| Max.:    | 100      | Data Type:      | UInt16    |
| Default: | 30       | Change:         | Real-time |

**Value Range:**

10% to 100%

**Description**

Defines the heat dissipation coefficient of the regenerative resistor, which is applicable to both external and built-in regenerative resistors.

Defines the heat dissipation coefficient of the regenerative resistor, which is applicable to both external and built-in regenerative resistors.

Set this parameter properly according to actual heat dissipation conditions of the resistor.

Recommendations:

Generally, the value of H02.24 cannot exceed 30% for natural cooling.

The value of H02.24 cannot exceed 50% for forced air cooling.

**H02.25 Regenerative resistor type**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2002-1Ah | Effective mode: | Real time |
|------|----------|-----------------|-----------|



|          |   |            |           |
|----------|---|------------|-----------|
| Min.:    | 0 | Unit:      | -         |
| Max.:    | 3 | Data Type: | UInt16    |
| Default: | 3 | Change:    | Real-time |

**Value Range:**

0: Built-in

1: External, natural cooling

2: External, forced air cooling

3: No resistor needed

**Description**

Defines the resistor type and the mode of absorbing and releasing the braking energy.

**H02.26 Power of external regenerative resistor**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-1Bh | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | W         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 40       | Change:         | Real-time |

**Value Range:**

1 W–65535W

**Description**

Defines the power of external regenerative resistor.

**H02.27 Resistance of external regenerative resistor**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-1Ch | Effective mode: | Real time |
| Min.:    | 15       | Unit:           | $\Omega$  |
| Max.:    | 1000     | Data Type:      | UInt16    |
| Default: | 50       | Change:         | Real-time |

**Value Range:**15 $\Omega$  to 1000 $\Omega$ **Description**

Defines the resistance of the external regenerative resistor.

**H02.28 Parameters Initialization**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-1Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Parameters in group H02 and above initialized

1: Parameters in group H00, H02 and above initialized

2: All parameters initialized (default values used for model-related parameters)

### Description

Settings of factory restore.

0: Parameters in group H02 and above initialized

1: Parameters in group H00, H02 and above initialized

2: All parameters initialized (default values used for model-related parameters)

## H02.30

### User password

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-1Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

### Value Range:

0–65535

### Description

-

## H02.31

### System parameter initialization

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-20h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

### Value Range:

0: No operation

1: Restore default settings

2: Clear fault records

### Description

Used to restore default values or clear fault records.

## H02.32

### Selection of parameters in group H0b

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-21h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 99       | Data Type:      | UInt16    |
| Default: | 50       | Change:         | Real-time |

### Value Range:

0–99

**Description**

Sets the offset of the parameter to be displayed on the operating panel.

For example, the setpoint 0 indicates the value of H0b.00 (Motor speed actual value) is displayed on the keypad.

The setpoint 1 indicates the value of H0b.01 is displayed on the operating panel.

**H02.35 Keypad data update frequency**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-24h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | Hz        |
| Max.:    | 20       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 Hz–20 Hz

**Description**

-

**H02.41 Manufacturer password**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-2Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

-

**H02.47 Delay time from power cable breakage to brake OFF**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-30h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 1000     | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms to 1000 ms

**Description**

Sets the delay time from power cable breakage to brake OFF.

## 2.4 H03 Terminal Input Parameters

### H03.00 DI function allocation 1 (activated upon power-on)

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2003-01h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 65535    | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | Real-time              |

#### Value Range:

0: 0x00: Corresponding to null  
 1: 0x01: Corresponding to FunIN.1  
 2: 0x02: Corresponding to FunIN.2  
 4: 0x04: Corresponding to FunIN.3  
 8: 0x08: Corresponding to FunIN.4  
 16: 0x10: Corresponding to FunIN.5  
 32: 0x20: Corresponding to FunIN.6  
 64: 0x40: Corresponding to FunIN.7  
 128: 0x80: Corresponding to FunIN.8  
 256: 0x100: Corresponding to FunIN.9  
 512: 0x200: Corresponding to FunIN.10  
 1024: 0x400: Corresponding to FunIN.11  
 2048: 0x800: Corresponding to FunIN.12  
 4096: 0x1000: Corresponding to FunIN.13  
 8192: 0x2000: Corresponding to FunIN.14  
 16384: 0x4000: Corresponding to FunIN.15  
 32768: 0x8000: Corresponding to FunIN.16

#### Description

Used to enable a certain DI function (FunIN.1 to FunIN.16) to be activated immediately at next power-on.

### H03.01 DI function allocation 2 (activated upon power-on)

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2003-02h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 65535    | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | Real-time              |

#### Value Range:

- 0: 0x00: Corresponding to null
- 1: 0x01: Corresponding to FunIN.17
- 2: 0x02: Corresponding to FunIN.18
- 4: 0x04: Corresponding FunIN.19
- 8: 0x08: Corresponding FunIN.20
- 16: 0x10: Corresponding FunIN.21
- 32: 0x20: Corresponding FunIN.22
- 64: 0x40: Corresponding FunIN.23
- 128: 0x80: Corresponding FunIN.24
- 256: 0x100: Corresponding FunIN.25
- 512: 0x200: Corresponding FunIN.26
- 1024: 0x400: Corresponding FunIN.27
- 2048: 0x800: Corresponding FunIN.28
- 4096: 0x1000: Corresponding FunIN.29
- 16384: 0x4000: Corresponding FunIN.31
- 32768: 0x8000: Corresponding FunIN.32

**Description**

Used to enable a certain DI function (FunIN.17 to FunIN.32) to be activated immediately at next power-on.

**H03.02**

**DI1 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-03h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 59       | Data Type:      | UInt16    |
| Default: | 14       | Change:         | Real-time |

**Value Range:**

- 0: No function
- 1: Servo ON
- 2: Alarm reset signal
- 3: Gain switchover switch
- 4: Main/Auxiliary reference switchover
- 5: Multi-reference direction
- 6: Multi-reference switchover CMD1
- 7: Multi-reference switchover CMD2
- 8: Multi-reference switchover CMD3
- 9: Multi-reference switchover CMD4

- 10: Mode switchover M1-SEL
- 11: Mode switchover M2-SEL
- 12: Zero clamp enable
- 13: Position reference inhibited
- 14: Positive limit switch
- 15: Negative limit switch
- 16: Positive external torque limit
- 17: Negative external torque limit
- 18: Forward jog
- 19: Reverse jog
- 20: Step enable
- 21: Hand wheel override signal 1
- 22: Hand wheel override signal 2
- 23: Hand wheel enable
- 24: Electronic gear ratio selection
- 25: Torque reference direction
- 26: Speed reference direction
- 27: Position reference direction
- 28: Multi-position reference enable
- 29: Interrupt positioning cancel
- 31: Home switch
- 32: Homing enable
- 33: Interrupt positioning inhibited
- 34: Emergency stop
- 35: Clear position deviation
- 36: Internal speed limit source
- 37: Pulse reference inhibited
- 38: Touch probe 1
- 39: Touch probe 2
- 40: Multi-speed enable
- 41: Current position as the home
- 42: Axis control command executed immediately
- 43: Axis control command not executed immediately
- 44: Positioning and reference completed signal clear
- 45: Interrupt positioning enable
- 46: Process segment enable
- 47: Process segment reference switchover 1
- 48: Process segment reference switchover 2
- 49: Process segment reference switchover 3

- 50: Process segment switch 4
- 51: Event-triggered process segment 1
- 52: Event-triggered process segment 2
- 53: Event-triggered process segment 3
- 54: Event-triggered process segment 4
- 55: Process segment halt
- 56: Gantry torque alignment
- 57: Gantry DI alignment enable
- 58: Gantry DI alignment clear
- 59: Gantry synchronization enable

### **Description**

Defines the function of DI1.

### **H03.03 DI1 logic selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-04h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

### **Value Range:**

0: Normally open

1: Closed

### **Description**

Used to set the level logic of DI1 when the function assigned to DI is active.

### **H03.04 DI2 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-05h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 59       | Data Type:      | UInt16    |
| Default: | 15       | Change:         | Real-time |

### **Value Range:**

See H03.02.

### **Description**

Defines the function of DI1.

### **H03.05 DI2 logic selection**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2003-06h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 1        | Data Type:      | UInt16    |

Default: 0

Change: Real-time

**Value Range:**

0: Normally open

1: Closed

**Description**

-

**H03.06****DI3 function**

Hex: 2003-07h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 59

Data Type: UInt16

Default: 13

Change: Real-time

**Value Range:**

See H03.02.

**Description**

Defines the function of DI1.

**H03.07****DI3 logic selection**

Hex: 2003-08h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Normally open

1: Closed

**Description**

-

**H03.08****DI4 function**

Hex: 2003-09h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 59

Data Type: UInt16

Default: 2

Change: Real-time

**Value Range:**

See H03.02.

**Description**

Defines the function of DI1.



**H03.09**
**DI4 logic selection**

Hex: 2003-0Ah

Min.: 0

Max.: 1

Default: 0

**Value Range:**

0: Normally open

1: Closed

**Description**

-

Effective mode:

Unit: -

Data Type: UInt16

Change: Real-time

**H03.10**
**DI5 function**

Hex: 2003-0Bh

Min.: 0

Max.: 59

Default: 1

**Value Range:**

See H03.02.

**Description**

Defines the function of DI1.

Effective mode:

Unit: -

Data Type: UInt16

Change: Real-time

**H03.11**
**DI5 logic selection**

Hex: 2003-0Ch

Min.: 0

Max.: 1

Default: 0

**Value Range:**

0: Normally open

1: Closed

**Description**

-

Effective mode:

Unit: -

Data Type: UInt16

Change: Real-time

**H03.12**
**DI6 function**

Hex: 2003-0Dh

Min.: 0

Max.: 59

Default: 0

**Value Range:**

Effective mode:

Unit: -

Data Type: UInt16

Change: Real-time

See H03.02.

### Description

Defines the function of DI1.

## H03.13 DI6 logic selection

Hex: 2003-0Eh

Effective mode: Real time

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

### Value Range:

0: Normally open

1: Closed

### Description

-

## H03.14 DI7 function

Hex: 2003-0Fh

Effective mode: Real time

Min.: 0

Unit: -

Max.: 59

Data Type: UInt16

Default: 45

Change: Real-time

### Value Range:

See H03.02.

### Description

Defines the function of DI1.

## H03.15 DI7 logic selection

Hex: 2003-10h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

### Value Range:

0: Normally open

1: Closed

### Description

-

## H03.16 DI8 function

Hex: 2003-11h

Effective mode: Real time

|          |    |            |           |
|----------|----|------------|-----------|
| Min.:    | 0  | Unit:      | -         |
| Max.:    | 59 | Data Type: | UInt16    |
| Default: | 31 | Change:    | Real-time |

**Value Range:**

See H03.02.

**Description**

Defines the function of DI1.

**H03.17 DI8 logic selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-12h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Normally open

1: Closed

**Description**

-

**H03.34 DI function allocation 3 (activated upon power-on)**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2003-23h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 65535    | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | Real-time              |

**Value Range:**

- 0: 0x00: Corresponding to null
- 1: 0x01: Corresponding to FunIN.33
- 2: 0x02: Corresponding to FunIN.34
- 4: 0x04: Corresponding to FunIN.35
- 8: 0x08: Corresponding to FunIN.36
- 16: 0x10: Corresponding to FunIN.37
- 32: 0x20: Corresponding to FunIN.38
- 64: 0x40: Corresponding to FunIN.39
- 128: 0x80: Corresponding to FunIN.40
- 256: 0x100: Corresponding to FunIN.41
- 512: 0x200: Corresponding to FunIN.42
- 1024: 0x400: Corresponding to FunIN.43
- 2048: 0x800: Corresponding to FunIN.44
- 4096: 0x1000: Corresponding to FunIN.45
- 8192: 0x2000: Corresponding to FunIN.46
- 16384: 0x4000: Corresponding to FunIN.47
- 32768: 0x8000: Corresponding to FunIN.48

**Description**

Used to enable a certain DI function (FunIN.33 to FunIN.37) to be activated immediately at next power-on.

**H03.35 DI function allocation 4 (activated upon power-on)**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2003-24h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 65535    | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | Real-time              |

**Value Range:**

0: 0x00: Corresponding to null  
1: 0x01: Corresponding to FunIN.49  
2: 0x02: Corresponding to FunIN.50  
4: 0x04: Corresponding FunIN.51  
8: 0x08: Corresponding FunIN.52  
16: 0x10: Corresponding FunIN.53  
32: 0x20: Corresponding FunIN.54  
64: 0x40: Corresponding FunIN.55  
128: 0x80: Corresponding FunIN.56  
256: 0x100: Corresponding FunIN.57  
512: 0x200: Corresponding FunIN.58  
1024: 0x400: Corresponding FunIN.59  
2048: 0x800: Corresponding FunIN.60  
4096: 0x1000: Corresponding FunIN.61  
8192: 0x2000: Corresponding FunIN.62  
16384: 0x4000: Corresponding FunIN.63

**Description**

Used to enable a certain DI function (FunIN.49 to FunIN.64) to be activated immediately at next power-on.

**H03.50 Voltage-type AI1 offset**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-33h | Effective mode: | Real time |
| Min.:    | -5000    | Unit:           | mV        |
| Max.:    | 5000     | Data Type:      | Int16     |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

-5000 mV–5000 mV

**Description**

Defines the actual AI1 input voltage when the drive sampling voltage is 0 after zero drift correction.

**H03.51 Voltage-type AI1 input filter time constant**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-34h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 655.35   | Data Type:      | UInt16    |
| Default: | 2.00     | Change:         | Real-time |

**Value Range:**

0.00 ms to 655.35 ms

**Description**

It sets the filter time constant of voltage signal input from AI1.

Set this parameter properly to avoid motor reference fluctuation caused by unstable analog voltage input and reduce motor misoperation caused by interference signals.

The filter function cannot eliminate or suppress zero drift or dead zone.

### H03.53 Voltage-type AI1 dead zone

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-36h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | mV        |
| Max.:    | 1000.0   | Data Type:      | UInt16    |
| Default: | 10.0     | Change:         | Real-time |

#### Value Range:

0.0 mV–1000.0 mV

#### Description

Defines the AI1 input voltage range when the drive sampling voltage is 0.

### H03.54 Voltage-type AI1 zero drift

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-37h | Effective mode: | Real time |
| Min.:    | -500.0   | Unit:           | mV        |
| Max.:    | 500.0    | Data Type:      | Int16     |
| Default: | 0.0      | Change:         | Real-time |

#### Value Range:

-500.0 mV–500.0 mV

#### Description

Zero drift refers to the value of the drive o sampling voltage relative to GND upon zero AI voltage.

Set H0d.10 (Automatic adjustment of analog channels) to 1 (AI1 adjustment) to perform automatic adjustment on AI1 zero drift. The AI1 zero drift after adjustment will be saved into H03.54.

### H03.55 Voltage-type AI2 offset

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-38h | Effective mode: | Real time |
| Min.:    | -5000    | Unit:           | mV        |
| Max.:    | 5000     | Data Type:      | Int16     |
| Default: | 0        | Change:         | Real-time |

#### Value Range:

-5000 mV–5000 mV

#### Description

Defines the actual AI2 input voltage when the drive sampling voltage is 0 after zero drift correction.

**H03.56 Voltage-type AI2 input filter time constant**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-39h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 655.35   | Data Type:      | UInt16    |
| Default: | 2.00     | Change:         | Real-time |

**Value Range:**

0.00 ms to 655.35 ms

**Description**

It sets the filter time constant of voltage signal input from AI2.

Set this parameter properly to avoid motor reference fluctuation caused by unstable analog voltage input and reduce motor misoperation caused by interference signals.

The filter function cannot eliminate or suppress zero drift or dead zone.

**H03.58 Voltage-type AI2 dead zone**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-3Bh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | mV        |
| Max.:    | 1000.0   | Data Type:      | UInt16    |
| Default: | 10.0     | Change:         | Real-time |

**Value Range:**

0.0 mV–1000.0 mV

**Description**

Defines the AI2 input voltage range when the drive sampling voltage is 0.

**H03.59 Voltage-type AI2 zero drift**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-3Ch | Effective mode: | Real time |
| Min.:    | -500.0   | Unit:           | mV        |
| Max.:    | 500.0    | Data Type:      | Int16     |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

-500.0 mV–500.0 mV

**Description**

Zero drift refers to the value of the drive o sampling voltage relative to GND upon zero AI voltage.

Set H0d.10 (Automatic adjustment of analog channels) to 1 (AI2 adjustment) to perform automatic adjustment on AI2 zero drift. The AI1 zero drift after adjustment will be saved into H03.59.

|               |                                                                                                                                     |          |                        |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------|----------|------------------------|
| <b>H03.60</b> | <b>DI1 filter time</b>                                                                                                              |          |                        |
|               | Hex:                                                                                                                                | 2003-3Dh | Effective    Real time |
|               |                                                                                                                                     |          | mode:                  |
|               | Min.:                                                                                                                               | 0.00     | Unit:        ms        |
|               | Max.:                                                                                                                               | 500.00   | Data Type:   UInt16    |
|               | Default:                                                                                                                            | 3.00     | Change:      Real-time |
|               | <b>Value Range:</b>                                                                                                                 |          |                        |
|               | 0.00 ms to 500.00 ms                                                                                                                |          |                        |
|               | <b>Description</b>                                                                                                                  |          |                        |
|               | Defines the filter time of DI1. The DI function is active only after the effective level is kept within the time defined by H03.60. |          |                        |
| <b>H03.61</b> | <b>DI2 filter time</b>                                                                                                              |          |                        |
|               | Hex:                                                                                                                                | 2003-3Eh | Effective    Real time |
|               |                                                                                                                                     |          | mode:                  |
|               | Min.:                                                                                                                               | 0.00     | Unit:        ms        |
|               | Max.:                                                                                                                               | 500.00   | Data Type:   UInt16    |
|               | Default:                                                                                                                            | 3.00     | Change:      Real-time |
|               | <b>Value Range:</b>                                                                                                                 |          |                        |
|               | 0.00 ms to 500.00 ms                                                                                                                |          |                        |
|               | <b>Description</b>                                                                                                                  |          |                        |
|               | Defines the filter time of DI2. The DI function is active only after the effective level is kept within the time defined by H03.61. |          |                        |
| <b>H03.62</b> | <b>DI3 filter time</b>                                                                                                              |          |                        |
|               | Hex:                                                                                                                                | 2003-3Fh | Effective    Real time |
|               |                                                                                                                                     |          | mode:                  |
|               | Min.:                                                                                                                               | 0.00     | Unit:        ms        |
|               | Max.:                                                                                                                               | 500.00   | Data Type:   UInt16    |
|               | Default:                                                                                                                            | 3.00     | Change:      Real-time |
|               | <b>Value Range:</b>                                                                                                                 |          |                        |
|               | 0.00 ms to 500.00 ms                                                                                                                |          |                        |
|               | <b>Description</b>                                                                                                                  |          |                        |
|               | Defines the filter time of DI3. The DI function is active only after the effective level is kept within the time defined by H03.62. |          |                        |
| <b>H03.63</b> | <b>DI4 filter time</b>                                                                                                              |          |                        |
|               | Hex:                                                                                                                                | 2003-40h | Effective    Real time |
|               |                                                                                                                                     |          | mode:                  |
|               | Min.:                                                                                                                               | 0.00     | Unit:        ms        |
|               | Max.:                                                                                                                               | 500.00   | Data Type:   UInt16    |
|               | Default:                                                                                                                            | 3.00     | Change:      Real-time |



**Value Range:**

0.00 ms to 500.00 ms

**Description**

Defines the filter time of DI4. The DI function is active only after the effective level is kept within the time defined by H03.63.

**H03.64**

**DI5 filter time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-41h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 500.00   | Data Type:      | UInt16    |
| Default: | 3.00     | Change:         | Real-time |

**Value Range:**

0.00 ms to 500.00 ms

**Description**

Defines the filter time of DI5. The DI function is active only after the effective level is kept within the time defined by H03.64.

**H03.65**

**DI6 filter time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-42h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 500.00   | Data Type:      | UInt16    |
| Default: | 3.00     | Change:         | Real-time |

**Value Range:**

0.00 ms to 500.00 ms

**Description**

Defines the filter time of DI6. The DI function is active only after the effective level is kept within the time defined by H03.65.

**H03.66**

**DI7 filter time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-43h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 500.00   | Data Type:      | UInt16    |
| Default: | 0.00     | Change:         | Real-time |

**Value Range:**

0.00 ms to 500.00 ms

**Description**

Defines the filter time of DI7. The DI function is active only after the effective level is kept within the time defined by H03.66.

H03.67

DI8 filter time

Hex:

2003-44h

Effective mode:

Real time

Min.:

0.00

Unit:

ms

Max.:

500.00

Data Type:

UInt16

Default:

3.00

Change:

Real-time

Value Range:

0.00 ms to 500.00 ms

Description

Defines the filter time of DI8. The DI function is active only after the effective level is kept within the time defined by H03.67.

H03.80

Speed corresponding to analog 10 V

Hex:

2003-51h

Effective mode:

Real time

Min.:

0

Unit:

[mm/s]/[rpm]

Max.:

10000

Data Type:

UInt16

Default:

3000

Change:

At stop

Value Range:

0[mm/s]/[rpm]–10000[mm/s]/[rpm]

Description

Defines the corresponding motor speed when the sampling voltage is 10 V.

Speed reference value = Sampling voltage/10 x H03.80

H03.81

Torque corresponding to analog 10 V

Hex:

2003-52h

Effective mode:

Real time

Min.:

0.00

Unit:

Multiplier

Max.:

8.00

Data Type:

UInt16

Default:

1.00

Change:

At stop

Value Range:

0.00 to 8.00

Description

Defines the motor torque corresponding to a sampling voltage of 10 V.

Torque reference value = Sampling voltage/10 × H03.81

## 2.5 H04 Terminal Output Parameters

|               |                                     |                 |           |
|---------------|-------------------------------------|-----------------|-----------|
| <b>H04.00</b> | <b>DO1 function selection</b>       |                 |           |
|               | Hex: 2004-01h                       | Effective mode: | Real time |
|               | Min.: 0                             | Unit:           | -         |
|               | Max.: 33                            | Data Type:      | UInt16    |
|               | Default: 1                          | Change:         | Real-time |
|               | <b>Value Range:</b>                 |                 |           |
|               | 0: N/A                              |                 |           |
|               | 1: Servo ready                      |                 |           |
|               | 2: Motor rotating signal            |                 |           |
|               | 3: Zero speed signal                |                 |           |
|               | 4: Speed consistent signal          |                 |           |
|               | 5: Positioning completed            |                 |           |
|               | 6: Positioning approaches           |                 |           |
|               | 7: Torque limited signal            |                 |           |
|               | 8: Speed limited signal             |                 |           |
|               | 9: Braking                          |                 |           |
|               | 10: Alarm                           |                 |           |
|               | 11: Fault                           |                 |           |
|               | 15: Interrupt positioning completed |                 |           |
|               | 16: Homing completed                |                 |           |
|               | 17: Electrical homing completed     |                 |           |
|               | 18: Torque attained signal          |                 |           |
|               | 19: Speed attained signal           |                 |           |
|               | 21: Enable completed                |                 |           |
|               | 22: Internal command completed      |                 |           |
|               | 23: Allow to write the next command |                 |           |
|               | 24: Internal motion completed       |                 |           |
|               | 25: Comparison output DO            |                 |           |
|               | 26: Closed-loop state               |                 |           |
|               | 27: Left limit                      |                 |           |
|               | 28: Right limit                     |                 |           |
|               | 30: Alarm or fault output           |                 |           |
|               | 31: Communication-forced DO         |                 |           |
|               | 32: EDM output                      |                 |           |
|               | 33: Gantry alignment                |                 |           |
|               | <b>Description</b>                  |                 |           |
|               | Defines the function of DO1.        |                 |           |

**H04.01 DO1 logic selection**

Hex: 2004-02h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Normally open

1: Closed

**Description**

Defines the level logic of DO1 when the function assigned to DO is active.

**H04.02 DO2 function**

Hex: 2004-03h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 33

Data Type: UInt16

Default: 5

Change: Real-time

**Value Range:**

See H04.00.

**Description**

Defines the function of DO2.

**H04.03 DO2 logic selection**

Hex: 2004-04h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Normally open

1: Closed

**Description**

Defines the level logic of DO2 when the function assigned to DO is active.

**H04.04 DO3 function**

Hex: 2004-05h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

See H04.00.

**Description**

Defines the function of DO3.

**H04.05 DO3 logic selection**

Hex: 2004-06h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Normally open

1: Closed

**Description**

Defines the level logic of DO3 when the function assigned to DO is active.

**H04.06 DO4 function**

Hex: 2004-07h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 11

Change: Real-time

**Value Range:**

See H04.00.

**Description**

Defines the function of DO4.

**H04.07 DO4 logic selection**

Hex: 2004-08h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Normally open

1: Closed

**Description**

Defines the level logic of DO4 when the function assigned to DO is active.

**H04.08 DO5 function**

Hex: 2004-09h

Effective Real time

mode:

Min.: 0 Unit: -  
 Max.: 65535 Data Type: UInt16  
 Default: 16 Change: Real-time

**Value Range:**

See H04.00.

**Description**

Defines the function of DO5.

**H04.09****DO5 logic selection**

Hex: 2004-0Ah Effective mode: Real time  
 mode:  
 Min.: 0 Unit: -  
 Max.: 1 Data Type: UInt16  
 Default: 0 Change: Real-time

**Value Range:**

0: Normally open

1: Closed

**Description**

Defines the level logic of DO5 when the function assigned to DO is active.

**H04.22****DO source selection**

Hex: 2004-17h Effective mode: Real time  
 mode:  
 Min.: 0 Unit: -  
 Max.: 31 Data Type: UInt16  
 Default: 0 Change: Real-time

**Value Range:**

| bit | Name | Description                                  |
|-----|------|----------------------------------------------|
| 0   | DO1  | 0: DO1 function output                       |
|     |      | 1: Bit 0 of H31.04 set through communication |
| 1   | DO2  | 0: DO2 function output                       |
|     |      | 1: Bit 1 of H31.04 set through communication |
| 2   | DO3  | 0: DO3 function output                       |
|     |      | 1: Bit 2 of H31.04 set through communication |
| 3   | DO4  | 0: DO4 function output                       |
|     |      | 1: Bit 3 of H31.04 set through communication |
| 4   | DO5  | 0: DO5 function output                       |
|     |      | 1: Bit 4 of H31.04 set through communication |

**Description**

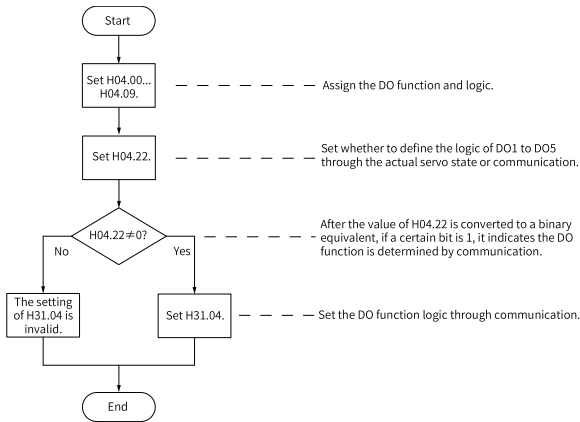
Defines whether the logic of a physical DO terminal is defined by the actual state of the drive or by communication.

The value of H04.22 is displayed in decimal on the keypad. When the value is converted to a binary equivalent: If bit(n) is 0, it indicates the logic of DO(n+1) is defined by the actual state of the drive. If bit(n) is 1, it indicates the logic of DO (n+1) is defined by communication (H31.04).

| Setpoint<br>(decimal) | Setpoint (binary) |      |      |      |      | DO logic                         |                                          |
|-----------------------|-------------------|------|------|------|------|----------------------------------|------------------------------------------|
|                       | bit4              | bit3 | bit2 | bit1 | bit0 | Defined by<br>the Drive<br>State | Defined by<br>Communica<br>tion (H31.04) |
|                       | DO5               | DO4  | DO3  | DO2  | DO1  |                                  |                                          |
| 0                     | 0                 | 0    | 0    | 0    | 0    | DO1–DO5                          | N/A                                      |
| 1                     | 0                 | 0    | 0    | 0    | 1    | DO2–DO5                          | DO1                                      |
| ...                   | ...               | ...  | ...  | ...  | ...  | ...                              | ...                                      |
| 31                    | 1                 | 1    | 1    | 1    | 1    | N/A                              | DO1–DO5                                  |

Set H04.22 to a value listed in the preceding table.

H31.04 is not displayed on the keypad and can only be modified through communication. For H31.04, "bit(n) = 1" indicates the logic of DO(n+1) is active. "bit(n) = 0" indicates the logic of DO(n+1) is inactive.



### H04.23 Communication-forced DO logic in non-OP status

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2004-18h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 31       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

#### Value Range:

| bit | Name | Description         |
|-----|------|---------------------|
| 0   | DO1  | 0: Status unchanged |
|     |      | 1: No output        |
| 1   | DO2  | 0: Status unchanged |
|     |      | 1: No output        |
| 2   | DO3  | 0: Status unchanged |
|     |      | 1: No output        |
| 3   | DO4  | 0: Status unchanged |
|     |      | 1: No output        |
| 4   | DO5  | 0: Status unchanged |
|     |      | 1: No output        |

**Description**

Sets DO state upon communication failure.

**H04.24****DO brake enable**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2004-19h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Disabled

1: Enable

**Description**

0: You can only control the motor brake through the built-in brake even if the DO brake function is available.

1: The DO brake function must be available.

Note: Functional safety models cannot use this feature.

**H04.50****AO1 signal selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2004-33h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 10       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**



- 0: Motor speed (1 V/1000 [mm/s]/[rpm])
- 1: Speed reference (1 V/1000 [mm/s]/[rpm])
- 2: Torque reference (1 V/100 x rated torque)
- 3: Position deviation (0.5 mV/1 reference unit)
- 4: Position deviation (0.5 mV/1 encoder unit)
- 5: Position reference speed (1 V/1000 [mm/s]/[rpm])
- 6: Positioning completed
- 8: AI1 voltage
- 9: AI2 voltage
- 10: Defined by H31.05

**Description**

Defines the physical value source of AO1.

**H04.51**

**AO1 offset voltage**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2004-34h | Effective mode: | Real time |
| Min.:    | -10000   | Unit:           | mV        |
| Max.:    | 10000    | Data Type:      | Int16     |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

-10000 mV–10000 mV

**Description**

Defines the actual AO1 output voltage after offset when the output voltage is 0 V in theory.

**H04.52**

**AO1 ratio**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2004-35h | Effective mode: | Real time |
| Min.:    | -99.99   | Unit:           | -         |
| Max.:    | 99.99    | Data Type:      | Int16     |
| Default: | 1.00     | Change:         | Real-time |

**Value Range:**

-99.99–99.99

**Description**

Defines the actual AO1 output voltage after amplification when the output voltage is 1V in theory.

## 2.6 H05 Position Control Parameters

### H05.00 Primary position reference source

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-01h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

#### Value Range:

0: Pulse reference

1: Step reference

2: Multi-position reference

#### Description

Defines the position reference source in position control mode.

### H05.01 Position pulse reference input terminal

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-02h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

#### Value Range:

0: Low speed

1: High speed

#### Description

Used to select the physical input terminal based on the input pulse frequency when the pulse reference acts as the position reference source in the position control mode.

### H05.02 Pulses per revolution

|          |            |                 |                        |
|----------|------------|-----------------|------------------------|
| Hex:     | 2005-03h   | Effective mode: | Upon the next power-on |
| Min.:    | 0          | Unit:           | [P/N-N]/[P/Rev]        |
| Max.:    | 4294967295 | Data Type:      | UInt32                 |
| Default: | 0          | Change:         | At stop                |

#### Value Range:

0–4294967295

#### Description

Defines the number of pulses required per revolution of the motor.

**H05.04 First-order low-pass filter time constant**

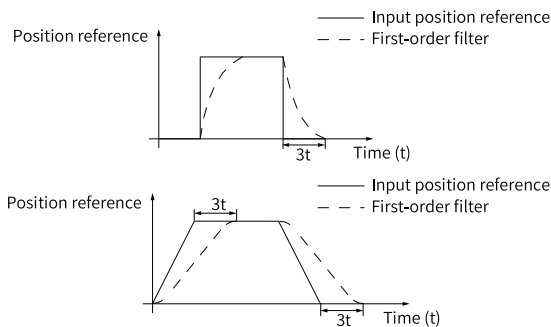
|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-05h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | ms        |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | At stop   |

**Value Range:**

0.0 ms to 6553.5 ms

**Description**

Defines the first-order low pass filter time constant of position references. If position reference P is rectangular wave or trapezoidal wave, the position reference after first-order low pass filtering is as follows:



This function does not affect the displacement value (position reference sum). An excessively high setpoint delays the responsiveness, so set a proper filter time constant based on actual conditions.

**H05.05 Step amount**

|          |          |                 |                |
|----------|----------|-----------------|----------------|
| Hex:     | 2005-06h | Effective mode: | Real time      |
| Min.:    | -9999    | Unit:           | Reference unit |
| Max.:    | 9999     | Data Type:      | Int16          |
| Default: | 50       | Change:         | At stop        |

**Value Range:**

-9999 to +9999

**Description**

Defines the position reference sum when the step reference acts as the main position reference source.

**H05.06 Moving average filter time constant 1**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2005-07h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

Min.: 0.0  
 Max.: 128.0  
 Default: 0.0  
 Unit: ms  
 Data Type: UInt16  
 Change: At stop

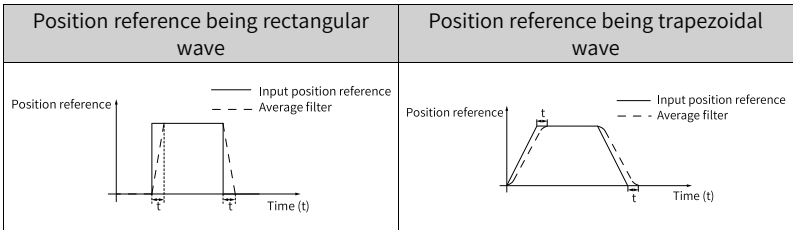
**Value Range:**

0.0 ms to 128.0 ms

**Description**

Defines the moving average filter time constant of position references.

If position reference P is rectangular wave or trapezoidal wave, the position reference after moving average filtering is as follows. This function does not affect the displacement value (position reference sum). An excessively high setpoint delays the responsiveness, so set a proper filter time constant based on actual conditions.



**H05.07 Electronic gear ratio 1 (numerator)**

Hex: 2005-08h  
 Effective mode: Real time  
 Min.: 1  
 Unit: -  
 Max.: 1073741824  
 Data Type: UInt32  
 Default: 67108864  
 Change: Real-time

**Value Range:**

1–1073741824

**Description**

Defines the numerator of electronic gear ratio 1.

**H05.09 Electronic gear ratio 1 (denominator)**

Hex: 2005-0Ah  
 Effective mode: Real time  
 Min.: 1  
 Unit: -  
 Max.: 1073741824  
 Data Type: UInt32  
 Default: 10000  
 Change: Real-time

**Value Range:**

1–1073741824

**Description**

Defines the denominator of electronic gear ratio 1.

**H05.11      Electronic gear ratio 2 (numerator)**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2005-0Ch   | Effective mode: | Real time |
| Min.:    | 1          | Unit:           | -         |
| Max.:    | 1073741824 | Data Type:      | UInt32    |
| Default: | 67108864   | Change:         | Real-time |

**Value Range:**

1–1073741824

**Description**

Defines the numerator of electronic gear ratio 2.

**H05.13      Electronic gear ratio 2 (denominator)**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2005-0Eh   | Effective mode: | Real time |
| Min.:    | 1          | Unit:           | -         |
| Max.:    | 1073741824 | Data Type:      | UInt32    |
| Default: | 10000      | Change:         | Real-time |

**Value Range:**

1–1073741824

**Description**

Defines the denominator of electronic gear ratio 2.

**H05.15      Pulse reference form**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2005-10h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 3        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Direction + Pulse, positive logic

1: Direction + Pulse, negative logic

2: Phase A + phase B quadrature pulse, quadrupled frequency

3: CW + CCW

**Description**Defines the input pulse form when the pulse reference acts as the main position reference source. See details in ["Table 2-2 " on page 173.](#)

Table 2-2 Descriptions of the pulse form

| H02.02 | H05.15 | Pulse input form                                              | Signal                            | Diagram of forward pulses     | Diagram of reverse pulses     |
|--------|--------|---------------------------------------------------------------|-----------------------------------|-------------------------------|-------------------------------|
| 0      | 0      | Pulse + Direction<br>Positive Logic                           | PULSE<br>SIGN                     |                               |                               |
|        | 1      | Pulse + Direction<br>Negative Logic                           | PULSE<br>SIGN                     |                               |                               |
|        | 2      | Phase A + Phase B<br>Quadrature pulse<br>Quadrupled frequency | PULSE (phase A)<br>SIGN (phase B) | Phase A leads phase B by 90°. | Phase B leads phase A by 90°. |
|        | 3      | CW+CCW                                                        | PULSE (CW)<br>SIGN (CCW)          |                               |                               |
| 1      | 0      | Pulse + Direction<br>Positive Logic                           | PULSE<br>SIGN                     |                               |                               |
|        | 1      | Pulse + Direction<br>Negative Logic                           | PULSE<br>SIGN                     |                               |                               |
|        | 2      | Phase A + Phase B<br>Quadrature pulse<br>Quadrupled frequency | PULSE (phase A)<br>SIGN (phase B) | Phase B leads phase A by 90°. | Phase A leads phase B by 90°. |
|        | 3      | CW+CCW                                                        | PULSE (CW)<br>SIGN (CCW)          |                               |                               |

## Note

The rise time and fall time of position pulse references must be shorter than 0.1 us.

Table 2-3 Specifications of pulse references

| Input terminal                  | Single-channel max. input frequency (pps) | Min. Time Width (us) |        |
|---------------------------------|-------------------------------------------|----------------------|--------|
| High-speed pulse input terminal | 4M                                        | t1                   | 0.125  |
|                                 |                                           | t2                   | 0.125  |
|                                 |                                           | t3                   | 0.125  |
|                                 |                                           | t4                   | 0.0625 |
|                                 |                                           | t5                   | 0.125  |
|                                 |                                           | t6                   | 0.125  |
| Low-speed pulse input terminal  | 200k                                      | t1                   | 2.5    |
|                                 |                                           | t2                   | 2.5    |
|                                 |                                           | t3                   | 2.5    |
|                                 |                                           | t4                   | 1.25   |
|                                 |                                           | t5                   | 2.5    |
|                                 |                                           | t6                   | 2.5    |

**H05.16 Clear action**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-11h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Position deviation cleared upon S-OFF or fault

1: Position deviation cleared upon S-OFF or fault

2: Position deviation cleared upon non-operational state or active DI function 35

**Description**

Defines the condition for clearing the position deviation.

**H05.17 Number of encoder frequency-division pulses**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2005-12h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | [P/N-N]/[P/Rev]        |
| Max.:    | 4194303  | Data Type:      | UInt32                 |
| Default: | 2500     | Change:         | At stop                |

**Value Range:**

0-4194303

**Description**

Defines the number of pulses output by PAO or PBO per revolution.

Pulse output resolution per revolution = (H05.17) x 4

**H05.19 Speed feedforward control**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2005-14h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 3        | Data Type: | UInt16    |
| Default: | 1        | Change:    | At stop   |

**Value Range:**

0: No speed feedforward

1: Internal speed feedforward

2: H05.72

3: Zero phase

**Description**

Defines the source of the speed loop feedforward signal.

When the external speed feedforward is set, the feedforward source is set by H05.72.

**H05.20 Condition for positioning completed signal output**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2005-15h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 10       | Data Type: | UInt16    |
| Default: | 0        | Change:    | Real-time |

**Value Range:**



0: When absolute value of position deviation is smaller than the value of H05.21, a positioning completion ON signal is output.

1: When filtered position command is 0 and absolute value of the position deviation is less than H05.21, a positioning completion ON signal is output.

2: When unfiltered position command is 0 and absolute value of the position deviation is less than H05.21, a positioning completion ON signal is output.

3: When the unfiltered position command is 0 and the absolute value of the position deviation is less than H05.21, a positioning completion ON signal is output. Thereafter, when the position command is 0, a positioning completion ON signal is output within the positioning holding time H0560. After the positioning holding time H0560 elapsed, the output of the positioning completion signal is determined according to the unfiltered position command and the absolute value of the position deviation.

4: When the filtered position command is 0 and the absolute value of the position deviation is less than H05.21, a positioning completion ON signal is output. Thereafter, when the position command is 0, a positioning completion ON signal is output within the positioning holding time H0560. After the positioning holding time H0560 elapsed, the output of the positioning completion signal is determined according to the filtered position command and the absolute value of the position deviation.

5: When the unfiltered position command is 0, the zero-speed signal is ON and the absolute value of the position deviation is less than H05.21, a positioning completion ON signal is output.

6: When the filtered position command is 0, the zero-speed signal is ON and the absolute value of the position deviation is less than H05.21, a positioning completion ON signal is output.

7: When the unfiltered position command is 0, positioning completion evaluation starts after the delay time H05.60 elapses. When the unfiltered position command is 0 and the absolute value of the position deviation is less than H05.21, a positioning completion ON signal is output.

8: When the filtered position command is 0, positioning completion evaluation starts after the delay time H05.60 elapses. When the filtered position command is 0 and the absolute value of the position deviation is less than H05.21, a positioning completion ON signal is output.

9: When the unfiltered position command is 0 and the absolute value of the position deviation is less than H05.21, positioning completion evaluation starts after the delay time H05.60 elapses. When the unfiltered position command is 0 and the absolute value of the position deviation is less than H05.21, a positioning completion ON signal is output.

10: When the filtered position command is 0 and the absolute value of the position deviation is less than H05.21, positioning completion evaluation starts after the delay time H05.60 elapses. When the filtered position command is 0 and the absolute value of the position deviation is less than H05.21, a positioning completion ON signal is output.

### Description

Defines the condition for outputting positioning completed/proximity signal. In the position control mode, if the absolute value of the position deviation during operation is within the setpoint of H05.21, the drive outputs the positioning completed/proximity signal. You can set the condition for outputting the positioning completed/proximity signal in H05.20.

### H05.21 Threshold of positioning completed

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2005-16h | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | Encoder unit |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 46976    | Change:         | Real-time    |

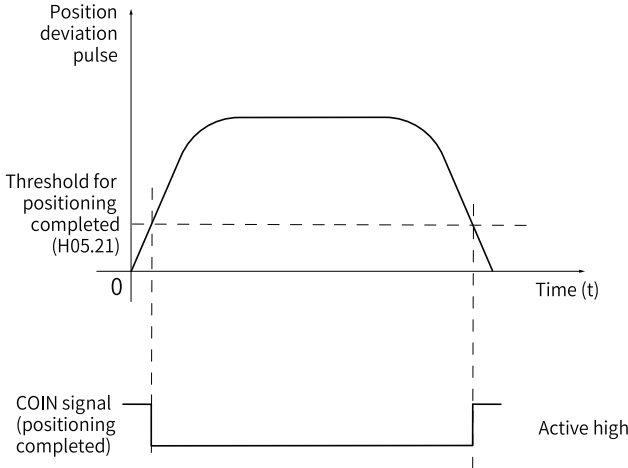
#### Value Range:

1 to 65535

### Description

Defines the threshold of the absolute value of position deviation when the drive outputs the positioning completed signal.

Positioning completed signal: DO function 5 (FunOUT.5: COIN).



The positioning completed signal is valid only when the servo drive is in running state and in position control.

### H05.22 Proximity threshold

|       |          |                 |              |
|-------|----------|-----------------|--------------|
| Hex:  | 2005-17h | Effective mode: | Real time    |
| Min.: | 1        | Unit:           | Encoder unit |

|          |       |            |           |
|----------|-------|------------|-----------|
| Max.:    | 65535 | Data Type: | UInt16    |
| Default: | 65535 | Change:    | Real-time |

**Value Range:**

1 to 65535

**Description**

Defines the threshold of the absolute value of position deviation when the drive outputs the proximity signal.

**H05.24 Interrupt positioning displacement**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2005-19h    | Effective mode: | Real time      |
| Min.:    | -1073741824 | Unit:           | Reference unit |
| Max.:    | 1073741824  | Data Type:      | Int32          |
| Default: | 10000       | Change:         | Real-time      |

**Value Range:**

-1073741824 to 1073741824

**Description**

Defines the position reference value during interrupt positioning.

**H05.26 Constant operating speed in interrupt positioning**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2005-1Bh | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 200      | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the maximum speed during interrupt positioning.

**H05.27 Acc./Dec. time of interrupt positioning**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-1Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Defines the time for the motor to change from 0[mm/s]/[rpm] to 1000[mm/s]/[rpm] at a constant speed during interrupt positioning.

**H05.29 Interruption fixed length unlock**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-1Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Defines whether to unlock the interrupt positioning signal.

**H05.30 Homing enable selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-1Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 8        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: Homing enabled through the HomingStart signal input from DI

2: Electrical homing enabled through the HomingStart signal input from DI

3: Homing started immediately upon power-on

4: Homing executed immediately

5: Electrical homing started

6: Current position as home

8: D-triggered position as home

**Description**

Defines the homing mode and the trigger signal source.

**H05.31 Homing mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-20h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 16       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

- 0: Forward, home switch as deceleration point and home
- 1: Reverse, home switch as deceleration point and home
- 2: Forward, Z signal as deceleration point and home
- 3: Reverse, motor Z signal as deceleration point and home
- 4: Forward, home switch as deceleration point and Z signal as home
- 5: Reverse, home switch as deceleration point and Z signal as home
- 6: Forward, positive limit switch as deceleration point and home
- 7: Reverse, negative limit switch as deceleration point and home
- 8: Forward, positive limit switch as deceleration point and Z signal as home
- 9: Reverse, negative limit switch as deceleration point and Z signal as home
- 10: Forward, mechanical limit position as deceleration point and home
- 11: Reverse, mechanical limit position as deceleration point and home
- 12: Forward, mechanical limit position as deceleration point and Z signal as home
- 13: Reverse, mechanical limit position as deceleration point and Z signal as home
- 14: Forward single-turn homing
- 15: Reverse single-turn homing
- 16: Nearby single-turn homing

**Description**

Defines the default motor direction of rotation, deceleration point, and home during homing.

**H05.32      Speed of high-speed search for home switch signal**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2005-21h | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 3000     | Data Type:      | UInt16       |
| Default: | 100      | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–3000[mm/s]/[rpm]

**Description**

Defines the motor speed for searching for the deceleration point signal during homing.

**H05.33      Speed of low-speed search for home switch signal**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2005-22h | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 1000     | Data Type:      | UInt16       |
| Default: | 10       | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–1000[mm/s]/[rpm]

**Description**

Defines the motor speed for searching for the home signal during homing.

**H05.34 Acceleration/Deceleration time during homing**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-23h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 1000     | Data Type:      | UInt16    |
| Default: | 1000     | Change:         | Real-time |

**Value Range:**

0 ms to 1000 ms

**Description**

Defines the time for the motor to accelerate from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm] at a constant speed during homing.

**H05.35 Home search time limit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-24h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10000    | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Defines the maximum homing time.

**H05.36 Mechanical home offset**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2005-25h    | Effective mode: | Real time      |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | 0           | Change:         | Real-time      |

**Value Range:**

-2147483648 to 2147483647

**Description**

Defines the absolute position of the motor after homing.

**H05.38 Frequency-division output source**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2005-27h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 4        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | Real-time              |

**Value Range:**

- 0: Encoder frequency-division output
- 1: Pulse reference synchronous output
- 2: Frequency-division output inhibited
- 3: Second encoder frequency-division output
- 4: H31-01 reference frequency output

**Description**

Defines the output source of the pulse output terminal.

| Value | Output Source                            | Remarks                                                                                                                                                                                                                                    |
|-------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0     | Encoder frequency-division output        | The encoder feedback signal is outputted only after being divided by the value of H05.17 during rotation of the motor.<br>Encoder frequency-division output mode is recommended when the host controller is used for closed-loop feedback. |
| 1     | Pulse reference synchronous output       | The input pulse references are outputted synchronously only when H05.00 is set to 0.<br>When the pulses of multi-axis servo is tracked synchronously, synchronous output of pulse references is recommended.                               |
| 2     | Frequency-division output inhibited      | No output is generated from pulse output terminals. In this case, frequency-division output terminals act as the input terminals of fully closed-loop external scale signals.                                                              |
| 3     | Second encoder frequency-division output | The encoder feedback signal is outputted only after being divided by the value of H05.17 during rotation of the motor.                                                                                                                     |
| 4     | H31.01 Reference frequency output        | -                                                                                                                                                                                                                                          |

**H05.39 Electronic gear ratio switchover condition**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-28h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Switchover after position reference is kept 0 for 2.5 ms

1: Switched in real time

### Description

Defines the condition for switching the electronic gear ratio. After the fully closed-loop function is enabled and H0F.00 is set to 2, the setpoint is forcibly set to 0.

When its value is 0: when H0F.00 = 2, the switching condition is that the position command is 0 and positioning is completed and lasts for 2.5 ms; when H0F.00 is not 2, the switching condition is that the position command keeps at 0 for 2.5 ms.

## H05.40 Mechanical home offset and action upon overtravel

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2005-29h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 3        | Data Type: | UInt16    |
| Default: | 0        | Change:    | Real-time |

### Value Range:

0: H05.36 as the coordinate after homing, reverse homing applied after homing triggered again on overtravel

1: H05.36 as the relative offset after homing, reverse homing applied after homing triggered again on overtravel

2: H05.36 as the coordinate after homing, reverse homing auto-applied on overtravel

3: H05.36 as the relative offset after homing, reverse homing auto-applied on overtravel

### Description

Defines the offset relationship between the mechanical home and mechanical zero point, and the action upon overtravel during homing.

## H05.41 Z pulse output polarity

|          |          |            |                        |
|----------|----------|------------|------------------------|
| Hex:     | 2005-2Ah | Effective  | Upon the next power-on |
|          |          | mode:      |                        |
| Min.:    | 0        | Unit:      | -                      |
| Max.:    | 65535    | Data Type: | UInt16                 |
| Default: | 1        | Change:    | At stop                |

### Value Range:

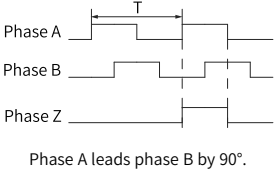
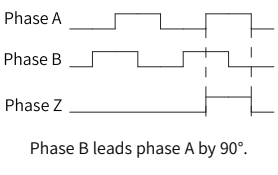
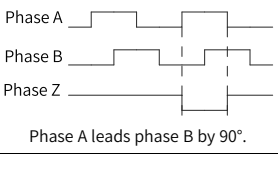
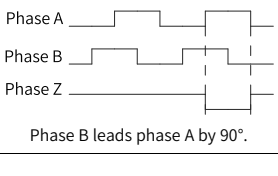
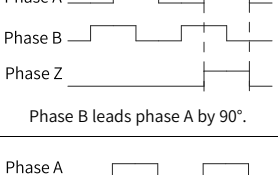
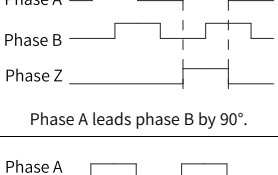
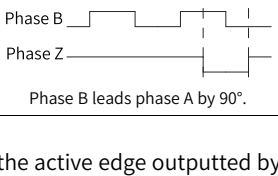
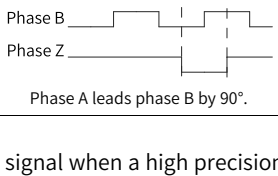


| bit | Name                                 | Description                                  |
|-----|--------------------------------------|----------------------------------------------|
| 0   | Frequency-division Z output polarity | 0: Positive (high level upon active Z pulse) |
|     |                                      | 1: Negative (low level upon active Z pulse)  |
| 1   | OCZ output polarity                  | 0: Positive (high level upon active Z pulse) |
|     |                                      | 1: Negative (low level upon active Z pulse)  |
| 2   | Inner loop probe Z signal source     | 0: Motor Z signal                            |
|     |                                      | 1: Frequency-division output Z signal        |

**Description**

Defines the output level when the Z pulse of pulse output terminal is active.

Table 2-4 Pulse diagrams of encoder frequency-division output (H05.38 = 0)

| H02.03<br>(Output pulse phase) | H05.41<br>(Z pulse output polarity) | Pulse Output Diagram of Forward RUN                                                                                     | Pulse Output Diagram of Reverse RUN                                                                                      |
|--------------------------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| 0                              | 0                                   |  <p>Phase A leads phase B by 90°.</p>  |  <p>Phase B leads phase A by 90°.</p>  |
|                                | 1                                   |  <p>Phase A leads phase B by 90°.</p>  |  <p>Phase B leads phase A by 90°.</p>  |
| 1                              | 0                                   |  <p>Phase B leads phase A by 90°.</p>  |  <p>Phase A leads phase B by 90°.</p>  |
|                                | 1                                   |  <p>Phase B leads phase A by 90°.</p> |  <p>Phase A leads phase B by 90°.</p> |

It is recommended to use the active edge outputted by Z signal when a high precision frequency-division output of Z signal is required.

| Value | Z pulse output polarity                   |
|-------|-------------------------------------------|
| 0     | Positive (high level upon active Z pulse) |
| 1     | Negative (low level upon active Z pulse)  |

H05.41 = 0: Falling-edge triggered; H05.41 = 1: Rising-edge triggered

### H05.43 Position pulse edge

Hex: 2005-2Ch

Effective mode: Upon the next power-on

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Rising edge-triggered

1: Falling edge-triggered

**Description**

The setpoint 0 indicates calculation starts from the falling edge of pulse input.

The setpoint 1 indicates calculation starts from the rising edge of pulse input.

**H05.44 Numerator of frequency-division output reduction ratio**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-2Dh | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 16383    | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

1–16383

**Description**

Defines the numerator of frequency-division output reduction ratio.

**H05.45 Denominator of frequency-division output reduction ratio**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-2Eh | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 8191     | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

1–8191

**Description**

Defines the denominator of frequency-division output reduction ratio.

**H05.46 DI selection of multi-turn frequency-division Z starting point**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2005-2Fh | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 8        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | Real-time              |

**Value Range:**

0: No selection

1: DI1

2: DI2

3: DI3

4: DI4

5: DI5

6: DI6

7: DI7

8: DI8

### Description

Sets the start point for frequency-division output. It is only effective when the frequency division ratio is greater than 1.

## H05.47 Frequency-division Z pulse width

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-30h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | us        |
| Max.:    | 400      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

### Value Range:

0us to 400us

### Description

Defines the minimum output width (us) of frequency-division output PZ. When the pulse signal is used as master encoder and fully closed-loop encoder, the setpoint 0 indicates the original Z signal will be outputted. Other setpoints indicate the frequency-division Z signal will be output.

## H05.48 Frequency-division output dead zone setting threshold

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-31h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 255      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

### Value Range:

0–255

### Description

Defines the dead zone threshold of frequency-division output to prevent frequency-division output caused by encoder jitter.

## H05.50 Mechanical gear ratio in absolute position rotation mode (numerator)

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2005-33h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |       |            |         |
|----------|-------|------------|---------|
| Min.:    | 1     | Unit:      | -       |
| Max.:    | 65535 | Data Type: | UInt16  |
| Default: | 1     | Change:    | At stop |

**Value Range:**

1–65535

**Description**

Defines the transmission ratio between the mechanical rotary load and the motor in the absolute position rotation mode.

**H05.51 Mechanical gear ratio in absolute position rotation mode (denominator)**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-34h | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

1–65535

**Description**

Defines the transmission ratio between the mechanical rotary load and the motor in the absolute position rotation mode.

**H05.52 Pulses per revolution of the load in absolute position rotation mode (low 32 bits)**

|          |            |                 |              |
|----------|------------|-----------------|--------------|
| Hex:     | 2005-35h   | Effective mode: | Real time    |
| Min.:    | 0          | Unit:           | Encoder unit |
| Max.:    | 4294967295 | Data Type:      | UInt32       |
| Default: | 0          | Change:         | At stop      |

**Value Range:**

0 to 4294967295

**Description**

Defines the number of pulses per revolution of the rotary load in the absolute position rotation mode.

**H05.54 Pulses per revolution of the load in absolute position rotation mode (high 32 bits)**

|          |            |                 |              |
|----------|------------|-----------------|--------------|
| Hex:     | 2005-37h   | Effective mode: | Real time    |
| Min.:    | 0          | Unit:           | Encoder unit |
| Max.:    | 4294967295 | Data Type:      | UInt32       |
| Default: | 0          | Change:         | At stop      |

**Value Range:**

0 to 4294967295

**Description**

Defines the number of pulses per revolution of the rotary load in the absolute position rotation mode.

**H05.58 Torque threshold in homing upon hit-and-stop**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-3Bh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 400.0    | Data Type:      | UInt16    |
| Default: | 100.0    | Change:         | Real-time |

**Value Range:**

0.0% to 400.0%

**Description**

Defines the maximum positive/negative torque limit in homing upon hit-and-stop.

**H05.59 Positioning window time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-3Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 30000    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 ms to 30000 ms

**Description**

If the positioning deviation is less than the time threshold of positioning completed, the positioning completed signal is active only if the set time threshold is exceeded.

**H05.60 Hold time of positioning completed**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-3Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 30000    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 ms to 30000 ms

**Description**

Defines the hold time of an active positioning completed signal.

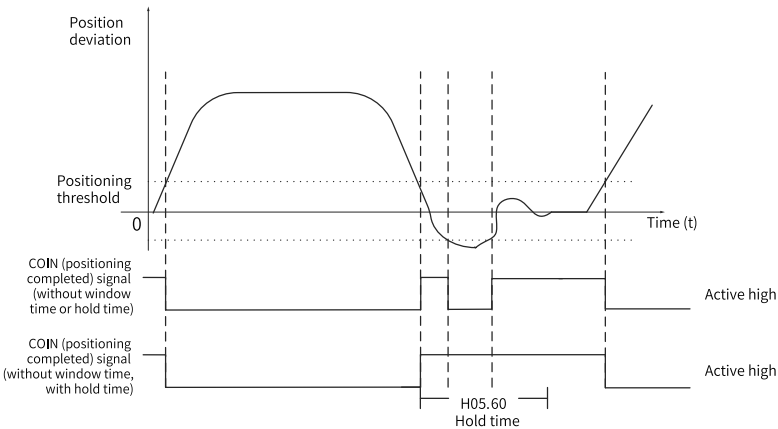


Figure 2-1 Schematic diagram for the window time (H05.59) and hold time (H05.60) of positioning completed signal

When the COIN (positioning completed) signal has a hold time of 0, it remains active until the next position reference is received.

**H05.66**

**Homing time unit**

Hex: 2005-43h

Effective Real time  
mode:

Min.: 0

Unit: -

Max.: 2

Data Type: UInt16

Default: 2

Change: At stop

**Value Range:**

0: 1 ms

1: 10 ms

2: 100 ms

**Description**

Defines the homing time unit. The actual timeout time is  $H05.35 \times H05.66$  ms.

**H05.67**

**Offset between zero point and single-turn absolute position**

Hex: 2005-44h

Effective Real time  
mode:

Min.: -2147483648

Unit: Encoder unit

Max.: 2147483647

Data Type: Int32

Default: 0

Change: At stop

**Value Range:**

-2147483648 to 2147483647

**Description**

Defines the offset position relative to the home when H05.31 is set to 14, 15, and 16.

**H05.71 Motor Z signal width**

Hex: 2005-48h

Effective Real time

mode:

Min.: 1

Unit: ms

Max.: 100

Data Type: UInt16

Default: 4

Change: Real-time

**Value Range:**

1 ms to 100 ms

**Description**

Output pulse width when motor Z signal is active.

**H05.72 External speed feedforward source selection**

Hex: 2005-49h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 2

Data Type: UInt16

Default: 1

Change: Real-time

**Value Range:**

0: 60B1

1: AI1

2: AI2

**Description**

External speed feedforward source selection

**2.7 H06 Speed Control Parameters****H06.00 Source of main speed reference A**

Hex: 2006-01h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 2

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**



0: Digital setting (H06.03)

1: AI1

2: AI2

**Description**

Defines the source of main speed reference A.

**H06.01 Source of auxiliary speed reference B**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-02h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 5        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

0: Digital setting (H06.03)

1: AI1

2: AI2

5: Multi-speed reference

**Description**

Defines the source of auxiliary speed reference B.

**H06.02 Speed reference source**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-03h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 4        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Source of main speed reference A

1: Source of auxiliary speed reference B

2: A+B

3: Switched between A and B

4: Communication

**Description**

Defines the source of speed references.

| Value | Control mode                          | Remarks                                                                                        |                                       |
|-------|---------------------------------------|------------------------------------------------------------------------------------------------|---------------------------------------|
| 0     | Source of main speed reference A      | The reference source is defined by H06.00.                                                     |                                       |
| 1     | Source of auxiliary speed reference B | The reference source is defined by H06.01.                                                     |                                       |
| 2     | A+B                                   | The reference source is the product of A + B (H06.00 + H06.01).                                |                                       |
| 3     | Switched between A and B              | The reference source is switched between A and B as defined by FunIN.4 (Cmd_SEL).              |                                       |
|       |                                       | State of FunIN.4 (Cmd_SEL)                                                                     | Reference Source                      |
|       |                                       | Inactive                                                                                       | Source of main speed reference A      |
|       |                                       | Active                                                                                         | Source of auxiliary speed reference B |
| 4     | Communication                         | The speed reference is defined by operating on H31.09 through communication (unit: 0.001 RPM). |                                       |

**H06.03 Speed reference set through keypad**

Hex: 2006-04h      Effective mode: Real time

Min.: -10000      Unit: [mm/s]/[rpm]

Max.: 10000      Data Type: Int16

Default: 200      Change: Real-time

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the speed reference value set through the keypad.

**H06.04 DI jog speed reference**

Hex: 2006-05h      Effective mode: Real time

Min.: 0      Unit: [mm/s]/[rpm]

Max.: 10000      Data Type: Int16

Default: 150      Change: Real-time

**Value Range:**

0[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the DI jog speed reference.

**H06.05 Acc. ramp time of speed reference**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-06h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Sets acceleration ramp time of speed reference. The acceleration/deceleration time constant of multi-speed references are defined only by parameters in group H12.

H06.05 defines the time for the speed reference to change from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm].

H06.06 defines the time for the speed reference to change from 1000 [mm/s]/[rpm] to 0 [mm/s]/[rpm].

The formulas for calculating the actual acceleration/deceleration time are as follows:

Actual acceleration time  $t_1 = \text{Speed reference} \div 1000 \times \text{Acceleration ramp time of speed reference}$

Actual deceleration time  $t_2 = \text{Speed reference} \div 1000 \times \text{Deceleration ramp time of speed reference}$

**H06.06 Dec. ramp time of speed reference**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-07h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Sets deceleration ramp time of speed reference.

**H06.07 Maximum speed limit**

|       |          |                 |              |
|-------|----------|-----------------|--------------|
| Hex:  | 2006-08h | Effective mode: | Real time    |
| Min.: | 0        | Unit:           | [mm/s]/[rpm] |

|          |       |            |           |
|----------|-------|------------|-----------|
| Max.:    | 10000 | Data Type: | UInt16    |
| Default: | 7000  | Change:    | Real-time |

**Value Range:**

0[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the maximum speed limit.

**H06.08 Forward speed threshold**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2006-09h | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 7000     | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the forward speed threshold.

**H06.09 Reverse speed threshold**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2006-0Ah | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 7000     | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the reverse speed threshold.

**H06.10 Deceleration unit in emergency stop**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-0Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Multiplied by 1

1: Multiplied by 10

2: Multiplied by 100

**Description**

Sets the deceleration unit in emergency stop.

**H06.11 Torque feedforward control**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-0Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

0: No torque feedforward

1: Internal torque feedforward

3: STune mode 5

**Description**

Defines the source for torque feedforward control.

**H06.12 Acceleration ramp time of jog speed**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-0Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Sets the acceleration ramp time of jog speed.

**H06.13 Speed feedforward smoothing filter**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-0Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | us        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 us to 65535 us

**Description**

Defines the speed feedforward smoothing filter time.

**H06.15 Zero clamp speed threshold**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2006-10h | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 10       | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the zero clamp speed threshold.

**H06.16 Threshold of TGON (motor rotation) signal**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2006-11h | Effective  | Real time    |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | [mm/s]/[rpm] |
| Max.:    | 1000     | Data Type: | UInt16       |
| Default: | 20       | Change:    | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–1000[mm/s]/[rpm]

**Description**

Sets the threshold of TGON (motor rotation) signal.

**H06.17 Threshold of V-Cmp (speed matching) signal**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2006-12h | Effective  | Real time    |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | [mm/s]/[rpm] |
| Max.:    | 100      | Data Type: | UInt16       |
| Default: | 10       | Change:    | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–100[mm/s]/[rpm]

**Description**

Defines the threshold of speed match signal.

**H06.18 Threshold of speed reach signal**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2006-13h | Effective  | Real time    |
|          |          | mode:      |              |
| Min.:    | 20       | Unit:      | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type: | UInt16       |
| Default: | 1000     | Change:    | Real-time    |

**Value Range:**

20[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the threshold of speed reached signal.

**H06.19 Threshold of zero speed output signal**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2006-14h | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 10       | Change:         | Real-time    |

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the threshold of zero speed output signal.

**H06.40 Ramp 1 deceleration time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-29h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

The time for deceleration from 1000 RPM to 0 RPM.

**H06.41 Ramp 2 deceleration time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-2Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

The time for deceleration from 1000 RPM to 0 RPM.

**H06.50 Speed S-curve enable switch**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-33h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

0: Disabled

1: Enabled

**Description**

0: Accelerate/Decelerate at fixed acceleration rate

1: Accelerate/Decelerate based on the S-curve

**H06.51 Increasing acceleration of speed S-curve acceleration segment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-34h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 50.0     | Change:         | At stop   |

**Value Range:**

0.0% to 100.0%

**Description**

-

**H06.52 Decreasing acceleration of speed S-curve acceleration segment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-35h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 50.0     | Change:         | At stop   |

**Value Range:**

0.0% to 100.0%

**Description**

-

**H06.53 Decreasing deceleration of speed S-curve deceleration segment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-36h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 50.0     | Change:         | At stop   |

**Value Range:**

0.0% to 100.0%

**Description**

-

**H06.54 Decreasing acceleration of speed S-curve deceleration segment**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2006-37h | Effective mode: | Real time |
| Min.: | 0.0      | Unit:           | %         |



|                     |       |            |         |
|---------------------|-------|------------|---------|
| Max.:               | 100.0 | Data Type: | UInt16  |
| Default:            | 50.0  | Change:    | At stop |
| <b>Value Range:</b> |       |            |         |
| 0.0% to 100.0%      |       |            |         |
| <b>Description</b>  |       |            |         |
| -                   |       |            |         |

## 2.8 H07 Torque Control Parameters

### H07.00 Source of main torque reference A

|                                                    |          |                 |           |
|----------------------------------------------------|----------|-----------------|-----------|
| Hex:                                               | 2007-01h | Effective mode: | Real time |
| Min.:                                              | 0        | Unit:           | -         |
| Max.:                                              | 2        | Data Type:      | UInt16    |
| Default:                                           | 0        | Change:         | At stop   |
| <b>Value Range:</b>                                |          |                 |           |
| 0: Keypad (H07.03)                                 |          |                 |           |
| 1: AI1                                             |          |                 |           |
| 2: AI2                                             |          |                 |           |
| <b>Description</b>                                 |          |                 |           |
| Defines the source of the main torque reference A. |          |                 |           |

### H07.01 Source of auxiliary torque reference B

|                                                    |          |                 |           |
|----------------------------------------------------|----------|-----------------|-----------|
| Hex:                                               | 2007-02h | Effective mode: | Real time |
| Min.:                                              | 0        | Unit:           | -         |
| Max.:                                              | 2        | Data Type:      | UInt16    |
| Default:                                           | 1        | Change:         | At stop   |
| <b>Value Range:</b>                                |          |                 |           |
| 0: Keypad (H07.03)                                 |          |                 |           |
| 1: AI1                                             |          |                 |           |
| 2: AI2                                             |          |                 |           |
| <b>Description</b>                                 |          |                 |           |
| Defines the source of auxiliary torque references. |          |                 |           |

### H07.02 Torque reference source

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2007-03h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 4        | Data Type:      | UInt16    |

Default: 0

Change: At stop

**Value Range:**

0: Source of main torque reference A

1: Source of auxiliary torque reference B

2: Source of A+B

3: Switched between A and B

4: Communication

**Description**

Selects the source of torque references.

| Value | Control mode                           | Remarks                                                                           |                                        |
|-------|----------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------|
| 0     | Source of main torque reference A      | The reference source is defined by H07.00.                                        |                                        |
| 1     | Source of auxiliary torque reference B | The reference source is defined by H07.01.                                        |                                        |
| 2     | A+B                                    | The reference source is the product of A+B (H07.00+H07.01).                       |                                        |
| 3     | Switched between A and B               | The reference source is switched between A and B as defined by FunIN.4 (Cmd_SEL). |                                        |
|       |                                        | State of FunIN.4 (Cmd_SEL)                                                        | Reference Source                       |
|       |                                        | Inactive                                                                          | Source of main torque reference A      |
|       |                                        | Active                                                                            | Source of auxiliary torque reference B |
| 4     | Communication                          | The torque reference is defined by operating on H31.11 through communication.     |                                        |

**H07.03 Torque reference set through keypad**

Hex: 2007-04h

Effective Real time

mode:

Min.: -400.0

Unit: %

Max.: 400.0

Data Type: Int16

Default: 0.0

Change: Real-time

**Value Range:**

-400.0% to 400.0%

**Description**

Defines the torque reference value that set through the keypad.

**H07.05 Torque reference filter time constant 1**

Hex: 2007-06h

Effective Real time

mode:

|          |       |            |           |
|----------|-------|------------|-----------|
| Min.:    | 0.00  | Unit:      | ms        |
| Max.:    | 30.00 | Data Type: | UInt16    |
| Default: | 0.50  | Change:    | Real-time |

**Value Range:**

0.00 ms to 30.00 ms

**Description**

Defines torque reference source of torque reference filter.

**H07.06 Torque reference filter time constant 2**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-07h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 30.00    | Data Type:      | UInt16    |
| Default: | 0.27     | Change:         | Real-time |

**Value Range:**

0.00 ms to 30.00 ms

**Description**

Defines torque reference source of torque reference filter.

**H07.07 Torque Limit source**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-08h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 4        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Positive/Negative internal torque limit

1: Internal or external limit as defined by DI

2: T\_LMT

3: T\_LMT or external limit as defined by DI (FunIN.16 or FunIN.17)

4: T\_LMT or internal limit (FunIN.16 or FunIN.17) as defined by DI

**Description**

Defines the torque reference source of torque limit source.

**H07.08 T-LMT selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-09h | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

1: AI1

2: AI2

**Description**

Sets the AI as the torque limit source.

**H07.09 Positive internal torque limit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-0Ah | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 400.0    | Data Type:      | UInt16    |
| Default: | 350.0    | Change:         | Real-time |

**Value Range:**

0.0% to 400.0%

**Description**

Defines the torque reference source of positive internal torque.

**H07.10 Negative internal torque limit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-0Bh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 400.0    | Data Type:      | UInt16    |
| Default: | 350.0    | Change:         | Real-time |

**Value Range:**

0.0% to 400.0%

**Description**

Defines the torque reference source of negative internal torque.

**H07.11 Positive external torque limit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-0Ch | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 400.0    | Data Type:      | UInt16    |
| Default: | 350.0    | Change:         | Real-time |

**Value Range:**

0.0% to 400.0%

**Description**

Defines the torque reference source of positive external torque limit.

**H07.12 Negative external torque limit**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2007-0Dh | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |       |            |           |
|----------|-------|------------|-----------|
| Min.:    | 0.0   | Unit:      | %         |
| Max.:    | 400.0 | Data Type: | UInt16    |
| Default: | 350.0 | Change:    | Real-time |

**Value Range:**

0.0% to 400.0%

**Description**

Defines the torque reference source of negative external torque limit.

**H07.15 Emergency-stop torque**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-10h | Effective mode: | At stop   |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 400.0    | Data Type:      | UInt16    |
| Default: | 100.0    | Change:         | Real-time |

**Value Range:**

0.0% to 400.0%

**Description**

Set torque command source for emergency stop.

**H07.17 Speed limit source**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-12h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Internal speed limit

1: V-LMT

2: H07.19 or H07.20 as defined by DI

**Description**

Defines the speed reference source of speed limit source.

**H07.18 V-LMT selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-13h | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

1: AI1

2: AI2

**Description**

Sets the AI as the speed limit source.

**H07.19 Positive speed limit/Speed limit 1 in torque control**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2007-14h | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 3000     | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the positive torque reference source in torque control.

**H07.20 Negative speed limit/Speed limit 2 in torque control**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2007-15h | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 3000     | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the negative torque reference source in torque control.

**H07.21 Torque reach base value**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-16h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 400.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

0.0% to 400.0%

**Description**

Defines the torque reference source of the base value for torque reach.

**H07.22 Torque reach valid value**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2007-17h | Effective mode: | Real time |
| Min.: | 0.0      | Unit:           | %         |
| Max.: | 400.0    | Data Type:      | UInt16    |

Default: 20.0

Change: Real-time

**Value Range:**

0.0% to 400.0%

**Description**

Defines the torque reference source of torque reach DO.

**H07.23 Torque reach invalid value**

Hex: 2007-18h

Effective mode: Real time

Min.: 0.0

Unit: %

Max.: 400.0

Data Type: UInt16

Default: 10.0

Change: Real-time

**Value Range:**

0.0% to 400.0%

**Description**

Defines the torque reference source of torque reach DO.

**H07.24 Field weakening depth**

Hex: 2007-19h

Effective mode: Real time

Min.: 60

Unit: %

Max.: 115

Data Type: UInt16

Default: 115

Change: Real-time

**Value Range:**

60% to 115%

**Description**

Defines the torque reference source of flux weakening.

**H07.25 Max. permissible demagnetizing current**

Hex: 2007-1Ah

Effective mode: Real time

Min.: 0

Unit: %

Max.: 300

Data Type: UInt16

Default: 100

Change: Real-time

**Value Range:**

0% to 300%

**Description**

Defines the torque reference source of max. permissible demagnetizing current.

**H07.26 Field weakening selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-1Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Defines the torque reference source of flux weakening.

**H07.27 Flux weakening gain**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-1Ch | Effective mode: | Real time |
| Min.:    | 0.001    | Unit:           | kHz       |
| Max.:    | 1.000    | Data Type:      | UInt16    |
| Default: | 0.030    | Change:         | Real-time |

**Value Range:**

0.001 kHz–1.000 kHz

**Description**

Defines the torque reference source of flux weakening.

**H07.28 Speed of flux weakening point**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2007-1Dh | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Defines the torque reference source of flux weakening point.

**H07.36 Time constant of low-pass filter 2**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-25h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 10.00    | Data Type:      | UInt16    |
| Default: | 0.00     | Change:         | Real-time |

**Value Range:**



0.00 ms to 10.00 ms

**Description**

Defines the torque reference source of low-pass filter 2.

**H07.37 Torque reference filter selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-26h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: First-order filter

1: Biquad filter

**Description**

Defines torque reference source of torque reference filter.

When second-order filter is selected, the filter structure is biquad filter for ROT motors, and the filter parameters are set through H07.38. For DDR/DDI motors, the filter structure is biquad low-pass filter, and the filter parameters are set through H07.42.

**H07.38 Biquad filter attenuation ratio**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-27h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 50       | Data Type:      | UInt16    |
| Default: | 16       | Change:         | Real-time |

**Value Range:**

0–50

**Description**

Defines the attenuation ratio of biquad filter.

**H07.40 Speed limit threshold in torque control mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-29h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 300      | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms to 300 ms

**Description**

Sets speed limit time window in the torque control mode.

**H07.42 Biquad low pass filter damping coefficient**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-2Bh | Effective mode: | Real time |
| Min.:    | 0.001    | Unit:           | -         |
| Max.:    | 10.000   | Data Type:      | UInt16    |
| Default: | 1.000    | Change:         | Real-time |

**Value Range:**

0.001–10.000

**Description**

Defines the damping coefficient of biquad low-pass filter.

**2.9 H08 Gain Parameters****H08.00 Speed loop gain**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-01h | Effective mode: | Real time |
| Min.:    | 0.1      | Unit:           | Hz        |
| Max.:    | 2000.0   | Data Type:      | UInt16    |
| Default: | 40.0     | Change:         | Real-time |

**Value Range:**

0.1 Hz–2000.0 Hz

**Description**

Defines the responsiveness of the speed loop. The higher the setpoint, the faster the speed loop response is. Note that an excessively high setpoint may cause vibration.

In the position control mode, the position loop gain must be increased together with the speed loop gain.

**H08.01 Speed loop integral time constant**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-02h | Effective mode: | Real time |
| Min.:    | 0.15     | Unit:           | ms        |
| Max.:    | 512.00   | Data Type:      | UInt16    |
| Default: | 19.89    | Change:         | Real-time |

**Value Range:**

0.15 ms to 512.00 ms

**Description**

Defines the integral time constant of the speed loop.

The lower the setpoint, the better the integral action, and the quicker will the deviation value be close to 0.

Note:

There is no integral action when H08.01 is set to 512.00.

### **H08.02      Position loop gain**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-03h | Effective mode: | Real time |
| Min.:    | 0.1      | Unit:           | Hz        |
| Max.:    | 2000.0   | Data Type:      | UInt16    |
| Default: | 64.0     | Change:         | Real-time |

#### **Value Range:**

0.1 Hz–2000.0 Hz

#### **Description**

Defines the proportional gain of the position loop.

Defines the responsiveness of the position loop. A high setpoint shortens the positioning time. Note that an excessively high setpoint may cause vibration.

The 1st group of gain parameters include H08.00 (Speed loop gain), H08.01 (Speed loop integral time constant), H08.02, and H07.05 (Filter time constant of torque reference).

### **H08.03      2nd speed loop gain**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-04h | Effective mode: | Real time |
| Min.:    | 0.1      | Unit:           | Hz        |
| Max.:    | 2000.0   | Data Type:      | UInt16    |
| Default: | 75.0     | Change:         | Real-time |

#### **Value Range:**

0.1 Hz–2000.0 Hz

#### **Description**

-

### **H08.04      2nd speed loop integral time constant**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-05h | Effective mode: | Real time |
| Min.:    | 0.15     | Unit:           | ms        |
| Max.:    | 512.00   | Data Type:      | UInt16    |
| Default: | 10.61    | Change:         | Real-time |

#### **Value Range:**

0.15 ms to 512.00 ms

#### **Description**

-

**H08.05 2nd position loop gain**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-06h | Effective mode: | Real time |
| Min.:    | 0.1      | Unit:           | Hz        |
| Max.:    | 2000.0   | Data Type:      | UInt16    |
| Default: | 120.0    | Change:         | Real-time |

**Value Range:**

0.1 Hz–2000.0 Hz

**Description**

Defines the second gain set of the position loop and speed loop. The 2nd group of gain parameters include H08.03 (Speed loop gain), H08.04 (Speed loop integral time constant), H08.05, and H07.06 (Torque reference filter time constant 2).

**H08.08 2nd gain mode setting**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-09h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

0: Fixed to the 1st gain, switched between P and PI as defined by bit26 of external 60FEh

1: Switched between the 1st and 2nd gain sets as defined by H08.09

**Description**

Defines the mode for switching to the 2nd gain set.

**H08.09 Gain switchover condition**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-0Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 10       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

- 0: Fixed to the 1st gain set (PS)
- 1: Switched as defined by bit26 of 60FEh
- 2: Torque reference too large (PS)
- 3: Speed reference too large (PS)
- 4: Speed reference change rate too large (PS)
- 5: Speed reference low/high speed threshold (PS)
- 6: Position deviation too large (P)
- 7: Position reference available (P)
- 8: Positioning unfinished (P)
- 9: Actual speed (P)
- 10: Position reference + Actual speed (P)

### Description

Defines the gain switchover condition.

| Value | Gain switchover condition                | Remarks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0     | Fixed to the 1st gain set                | The 1st gain set applies.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 1     | Switched as defined by bit26 of 60FEh    | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 2     | Torque reference too large               | If the torque reference absolute value exceeds (Level + Dead time) [%] in the last 1st gain set, the drive switches to the 2nd gain set.<br>If the absolute value of the torque reference is lower than (level – Dead time) [%] and such status lasts within the delay defined by H08.10 (Gain switchover delay) in the 2nd gain, the drive returns to the 1st gain set.                                                                                                                                                                                                           |
| 3     | Speed reference too large                | If the speed reference absolute value exceeds (Level + Dead time) [rpm] in the last 1st gain set, the drive switches to the 2nd gain set.<br>If the absolute value of the speed reference is lower than (level - Dead time) [rpm] and such status lasts within the delay defined by H08.10 (Gain switchover delay) in the 2nd gain, the drive returns to the 1st gain set.                                                                                                                                                                                                         |
| 4     | Speed reference change rate too large    | Active in the control modes other than speed control<br>If the absolute value of the change rate of the speed reference exceeds (Level + Dead time) [10 rpm/s] in the last 1st gain set, the drive switches to the 2nd gain set.<br>If the absolute value of the speed reference change rate is lower than (level – hysteresis) [10 rpm/s] and such status lasts within the delay defined by H08.10 (Gain switchover delay) in the 2nd gain, the drive returns to the 1st gain set.<br>In the speed control mode, the 1st gain set always applies.                                 |
| 5     | Speed reference high/low-speed threshold | If the speed reference absolute value exceeds (Level - Dead time) [rpm] in the last 1st gain set, the drive starts to switch to the 2nd gain set, with gains changed gradually. When the speed reference absolute value reaches (Level + Dead time) [rpm], the 2nd gain set applies.<br>If the speed reference absolute value is lower than (Level + Dead time) [rpm] in the last 2nd gain set, the drive starts to return to the 1st gain set, with gains changed gradually. When the speed reference absolute value reaches (Level - Dead time) [rpm], the 1st gain set applies. |

| Value | Gain switchover condition         | Remarks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------|-----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6     | Position deviation too large      | Active only in position control and full closed-loop control.<br>If the position deviation absolute value exceeds (Level + Dead time) [encoder unit] in the last 1st gain set, the drive switches to the 2nd gain set.<br>When the absolute value of the position deviation is lower than (Level - Dead time) [encoder unit] and such status lasts within the delay defined by H08.10 (Gain switchover delay) in the 2nd gain, the drive returns to the 1st gain set.<br>If the drive is not in position control or full closed-loop control, the 1st gain set always applies.                                                                                                                                                                                                                                                                                                                                                             |
| 7     | Position reference available      | Active only in position control and full closed-loop control.<br>If the position reference is not 0 in the last 1st gain set, the drive switches to the 2nd gain set.<br>When the position reference is 0 and such status lasts within the delay defined by H08.10 (Gain switchover delay) in the 2nd gain, the drive returns to the 1st gain set.<br>If the drive is not in position control or full closed-loop control, the 1st gain set always applies.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 8     | Positioning uncompleted           | Active only in position control and full closed-loop control.<br>If positioning has not been completed in the last 1st gain set, the drive switches to the 2nd gain set.<br>If positioning is not completed and such status lasts within the delay defined by H08.10 (Gain switchover delay) in the 2nd gain set, the servo drive returns to the 1st gain set.<br>If the drive is not in position control or full closed-loop control, the 1st gain set always applies.                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 9     | Actual speed too high             | Active only in position control and full closed-loop control.<br>If the absolute value of actual speed exceeds (Level + Dead time) [rpm] in the last 1st gain set, the drive switches to the 2nd gain set.<br>If the absolute value of actual speed is lower than (Level - Dead time) [rpm] and such status lasts within the delay defined by H08.10 (Gain switchover delay) in the 2nd gain set, the drive returns to the 1st gain set.<br>If the drive is not in position control or full closed-loop control, the 1st gain set always applies.                                                                                                                                                                                                                                                                                                                                                                                          |
| 10    | Position reference + Actual speed | Active only in position control and full closed-loop control.<br>If the position reference is not 0 in the last 1st gain set, the drive switches to the 2nd gain set.<br>If the position reference is 0 and such status lasts within the delay defined by H08.10 (Gain switchover delay) in the 2nd gain set, the 2nd gain set applies. When the position reference is 0 and the delay defined by (H08.10) is reached, if the absolute value of actual speed is lower than (Level) [rpm], the speed loop integral time constant is fixed to the setpoint of H08.04 (2nd speed loop integral time constant), and others return to the 1st gain set; if the absolute value of actual speed does not reach (Level - Dead time) [rpm], the speed integral also returns to the setpoint of H08.01 (Speed loop integral time constant).<br>If the drive is not in position control or full closed-loop control, the 1st gain set always applies. |

**H08.10 Gain switchover delay**

Hex: 2008-0Bh

Effective mode: Real time

Min.: 0.0

Unit: ms

Max.: 1000.0

Data Type: UInt16

Default: 5.0

Change: Real-time

**Value Range:**

0.0 ms to 1000.0 ms

### Description

Defines the delay when the drive switches from the 2nd gain set to the 1st gain set.

#### H08.11 Gain switchover level

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-0Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 20000    | Data Type:      | UInt16    |
| Default: | 50       | Change:         | Real-time |

#### Value Range:

0–20000

#### Description

Defines the gain switchover level.

Gain switchover is affected by both the level and the dead time, as defined by H08.09. The unit of gain switchover level varies with the switchover condition.

#### H08.12 Gain switchover hysteresis

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-0Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 20000    | Data Type:      | UInt16    |
| Default: | 30       | Change:         | Real-time |

#### Value Range:

0–20000

#### Description

Defines the dead time for gain switchover.

Gain switchover is affected by both the level and the dead time, as defined by H08.09. The unit of gain switchover hysteresis varies with the switchover condition.

Note:

The set value of H08.11 (Gain switchover level) must be no less than that of H08.12; otherwise, the H08.11 will be set to a value equal to H08.12 automatically.

#### H08.13 Position gain switchover time

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-0Eh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | ms        |
| Max.:    | 1000.0   | Data Type:      | UInt16    |
| Default: | 3.0      | Change:         | Real-time |

**Value Range:**

0.0 ms to 1000.0 ms

**Description**

In position control, if H08.05 (2nd position loop gain) is much higher than H08.02 (Position loop gain), set the time for switching from H08.02 to H08.05. This parameter can be used to reduce the impact caused by an increase in the position loop gain.

**H08.15 Load moment of inertia ratio**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-10h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | -         |
| Max.:    | 120.00   | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | Real-time |

**Value Range:**

0.00–120.00

**Description**

Defines the mechanical load inertia ratio relative to the motor moment of inertia.

When H08.15 is set to 0, it indicates the motor carries no load; if it is set to 1.00, it indicates the mechanical load inertia is the same as the motor moment of inertia.

**H08.17 Zero phase delay**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-12h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | ms        |
| Max.:    | 4.0      | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

0.0 ms to 4.0 ms

**Description**

-

**H08.18 Time constant of speed feedforward filter**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-13h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 64.00    | Data Type:      | UInt16    |
| Default: | 0.50     | Change:         | Real-time |

**Value Range:**



0.00 ms to 64.00 ms

**Description**

Defines the filter time constant of speed feedforward.

**H08.19 Speed feedforward gain**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-14h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

0.0% to 100.0%

**Description**

In position control and full closed-loop control, speed feedforward is the product of speed feedforward signal multiplied by H08.19 and is part of the speed reference.

Increasing the setpoint improves the responsiveness to position references and reduces the position deviation during operation at a constant speed.

Set H08.18 to a fixed value first, and then increase the value of H08.19 gradually from 0 to a certain value at which speed feedforward achieves the desired effect.

Adjust H08.18 and H08.19 repeatedly until a balanced performance is achieved.

Note:

For how to enable the speed feedforward function and select the speed feedforward signal, see H05.19 (Speed feedforward control).

**H08.20 Torque feedforward filter time constant**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-15h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 64.00    | Data Type:      | UInt16    |
| Default: | 0.50     | Change:         | Real-time |

**Value Range:**

0.00 ms to 64.00 ms

**Description**

Defines the filter time constant of torque feedforward.

**H08.21 Torque feedforward gain**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2008-16h | Effective mode: | Real time |
| Min.: | 0.0      | Unit:           | %         |

|          |       |            |           |
|----------|-------|------------|-----------|
| Max.:    | 300.0 | Data Type: | UInt16    |
| Default: | 0.0   | Change:    | Real-time |

**Value Range:**

0.0% to 300.0%

**Description**

In control modes other than torque control, torque feedforward is the product of torque feedforward signal multiplied by H08.21 and is part of the torque reference.

Increasing the setpoint improves the responsiveness to variable speed references.

Increasing the setpoint improves the responsiveness to position references and reduces the position deviation during operation at a constant speed.

During parameter adjustment, set H08.20 (Torque feedforward filter time constant) to the default value first, and then increase H08.21 gradually to enhance the effect of torque feedforward. When speed overshoot occurs, keep H08.21 unchanged and increase the value of H08.20. Adjust H08.20 and H08.21 repeatedly until a balanced performance is achieved.

Note:

For how to enable the torque feedforward function and select the torque feedforward signal, see H06.11 (Torque feedforward control).

**H08.22 Speed feedback filtering option**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-17h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 4        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Inhibited

1: 2 times

2: 4 times

3: 8 times

4: 16 times

**Description**

Defines the moving average filtering times for speed feedback.

The higher the setpoint, the weaker the speed feedback fluctuation, but the longer the feedback delay will be.

**H08.23 Cutoff frequency of speed feedback low-pass filter**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2008-18h | Effective mode: | Real time |
| Min.: | 100      | Unit:           | Hz        |

|          |      |            |           |
|----------|------|------------|-----------|
| Max.:    | 8000 | Data Type: | UInt16    |
| Default: | 8000 | Change:    | Real-time |

**Value Range:**

100 Hz–8000 Hz

**Description**

Defines the cutoff frequency for first-order low-pass filtering on the speed feedback.

Note:

The lower the setpoint, the weaker the speed feedback fluctuation, and the longer the feedback delay will be.

Setting this parameter to 4000 Hz negates the filtering effect.

**H08.24 PDFF control coefficient**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-19h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 200.0    | Data Type:      | UInt16    |
| Default: | 100.0    | Change:         | Real-time |

**Value Range:**

0.0% to 200.0%

**Description**

Defines the control mode of the speed loop.

When this parameter is set to 100.0, the speed loop adopts PI control (default) with quick dynamic response.

When this parameter is set to 0.0, speed loop integral action is enhanced, which filters out low-frequency interference but also slows down the dynamic response.

H08.24 can be used to keep a good responsiveness of the speed loop, with the anti-interference capacity in low-frequency bands improved and the speed feedback overshoot unaffected.

**H08.25 Speed measurement method**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-1Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: M-method

1: MT-method

**Description**

Activated only when it is set to 1 and a pulse encoder is used.

**H08.27 Speed observer cutoff frequency**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-1Ch | Effective mode: | Real time |
| Min.:    | 50       | Unit:           | Hz        |
| Max.:    | 600      | Data Type:      | UInt16    |
| Default: | 170      | Change:         | Real-time |

**Value Range:**

50 Hz–600 Hz

**Description**

Defines the cutoff frequency of the speed observer. Note that an excessively high setpoint may incur resonance. Decrease the setpoint properly in case of large speed feedback noise.

**H08.28 Speed observer inertia correction coefficient**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-1Dh | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | %         |
| Max.:    | 1600     | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

**Value Range:**

1% to 1600%

**Description**

Defines the speed observer inertia correction coefficient. If H08.15 is set based on the actual inertia, there is no need to adjust this parameter.

**H08.29 Speed observer filter time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-1Eh | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 10.00    | Data Type:      | UInt16    |
| Default: | 0.80     | Change:         | Real-time |

**Value Range:**

0.00 ms to 10.00 ms

**Description**

Defines the speed observer filter time. It is recommended to set this parameter to a value equal to the sum of H07.05 plus 0.2 ms.

**H08.31 Disturbance cutoff frequency**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2008-20h | Effective mode: | Real time |
| Min.: | 1        | Unit:           | Hz        |

|          |      |            |           |
|----------|------|------------|-----------|
| Max.:    | 4000 | Data Type: | UInt16    |
| Default: | 600  | Change:    | Real-time |

**Value Range:**

1 Hz–4000 Hz

**Description**

Defines the cutoff frequency of the disturbance observer. Increasing the setpoint improves the responsiveness of the disturbance observer and the compensation effect. Note that an excessively high setpoint may incur resonance.

**H08.32 Disturbance compensation gain**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-21h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | %         |
| Max.:    | 100      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0% to 100%

**Description**

Defines the compensation gain of the disturbance observer. The setpoint 100% indicates full compensation.

**H08.33 Disturbance observer inertia correction coefficient**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-22h | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | %         |
| Max.:    | 1600     | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

**Value Range:**

1% to 1600%

**Description**

Defines the disturbance observer inertia correction coefficient. If H08.15 is set based on the actual inertia, there is no need to adjust this parameter.

**H08.40 Speed observer selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-29h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: Enabled

### Description

Used to set the enable bit for speed observer.

## H08.42 Model control selection

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-2Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

### Value Range:

0: Disabled

1: Enabled

2: Reserved

### Description

Used to enable model tracking control.

## H08.43 Model gain

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-2Ch | Effective mode: | Real time |
| Min.:    | 0.1      | Unit:           | -         |
| Max.:    | 2000.0   | Data Type:      | UInt16    |
| Default: | 40.0     | Change:         | Real-time |

### Value Range:

0.1–2000.0

### Description

Defines the single inertia model gain. The higher the gain, the faster the position response. Note that an excessively high setpoint may incur excessive overshoot.

## H08.46 Feedforward value

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-2Fh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | -         |
| Max.:    | 102.4    | Data Type:      | UInt16    |
| Default: | 95.0     | Change:         | Real-time |

### Value Range:

0.0–102.4

### Description

Defines the speed feedforward gain for single inertia model control. If overshoot occurs, reduce the setpoint properly.

**H08.53 Medium- and low-frequency jitter suppression frequency 3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-36h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | Hz        |
| Max.:    | 300.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

0.0 Hz–300.0 Hz

**Description**

Set this parameter based on actual resonance frequency. The resonance suppression range is 100 Hz to 300 Hz.

**H08.54 Medium- and low-frequency jitter suppression compensation 3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-37h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | %         |
| Max.:    | 200      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0% to 200%

**Description**

Defines the compensation gain for medium- and low-frequency suppression compensation 3. The setpoint 200% indicates full compensation.

**H08.56 Medium- and low-frequency jitter suppression phase modulation 3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-39h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | %         |
| Max.:    | 600      | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

**Value Range:**

0% to 600%

**Description**

Adjust this parameter based on the actual compensation effect.

**H08.59 Medium- and low-frequency jitter suppression frequency 4**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-3Ch | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | Hz        |
| Max.:    | 300.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

0.0 Hz–300.0 Hz

**Description**

Set this parameter based on actual resonance frequency. The resonance suppression range is 100 Hz to 300 Hz.

**H08.60 Medium- and low-frequency jitter suppression compensation 4**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-3Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | %         |
| Max.:    | 200      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0% to 200%

**Description**

Defines the compensation gain for medium- and low-frequency suppression compensation 4. The setpoint 200% indicates full compensation.

**H08.61 Medium- and low-frequency jitter suppression phase modulation 4**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-3Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | %         |
| Max.:    | 600      | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

**Value Range:**

0% to 600%

**Description**

Adjust this parameter based on the actual compensation effect.

**H08.62 Position loop integral time constant**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-3Fh | Effective mode: | Real time |
| Min.:    | 0.15     | Unit:           | -         |
| Max.:    | 512.00   | Data Type:      | UInt16    |
| Default: | 512.00   | Change:         | Real-time |

**Value Range:**

0.15–512.00

**Description**

Defines the position loop integral time constant.



**H08.63      2nd position loop integral time constant**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-40h | Effective mode: | Real time |
| Min.:    | 0.15     | Unit:           | -         |
| Max.:    | 512.00   | Data Type:      | UInt16    |
| Default: | 512.00   | Change:         | Real-time |

**Value Range:**

0.15–512.00

**Description**

Defines the 2nd position loop integral time constant.

**H08.64      Speed observer feedback source**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-41h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: Enabled

**Description**

-

**H08.65      Zero deviation control selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-42h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Used to enable/disable zero deviation control.

**H08.66      Zero deviation control position average filter**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-43h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | ms        |
| Max.:    | 320.0    | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0 ms to 320.0 ms

### Description

Defines the average filter time of zero deviation control position. It is recommended to increase the setpoint in case of large noise caused by low command resolution.

## H08.68 Speed feedforward of zero deviation control

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-45h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 100.0    | Change:         | Real-time |

### Value Range:

0.0% to 100.0%

### Description

Defines the speed feedforward of zero deviation control.

## H08.69 Torque feedforward of zero deviation control

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-46h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 100.0    | Change:         | Real-time |

### Value Range:

0.0% to 100.0%

### Description

Defines the torque feedforward of zero deviation control.

## H08.90 Encoder scale spacing ripple suppressor enable

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-5Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 6        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

### Value Range:

0: Inhibited

1: 1st group activated only-adaptive mode

2: 1st group activated only-hysteresis mode

3: Two groups activated-adaptive mode

4: Two groups activated-hysteresis mode

### Description

Sets encoder scale pitch ripple suppression.

(1) This function is only used to suppress or eliminate the torque ripple of the control loop caused by the encoder scale pitch ripple, and to reduce the speed fluctuation and operating noise to a certain extent.

(2) This function is not suitable for applications with frequent speed changes and short travels, and it is better for applications with long travels and slow speed changes (such as the digital printing industry).

(3) The number of suppressors to be used is determined according to the number of torque ripple components caused by the encoder scale pitch ripple.

(4) The hysteretic mode is only suitable for reciprocating constant speed operation, and the adaptive mode is suitable for the occasion with slow speed change. You should choose the suitable mode as needed.

## 2.10 H09 Auto-tuning Parameters

### H09.00 Auto-adjustment mode

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-01h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 7        | Data Type:      | UInt16    |
| Default: | 4        | Change:         | Real-time |

**Value Range:**

0: Disabled, manual gain tuning required

1: Enabled, gain parameters generated automatically based on the stiffness level

2: Positioning mode, gain parameters generated automatically based on the stiffness level

3: Interpolation mode+Inertia auto-tuning

4: Normal mode+Inertia auto-tuning

5: Stune mode 5

6: Quick positioning mode+Inertia auto-tuning

**Description**

Defines different gain tuning modes. Related gain parameters can be set manually or automatically according to the stiffness level.

### H09.01 Stiffness level selection

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2009-02h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |

|          |    |            |           |
|----------|----|------------|-----------|
| Max.:    | 41 | Data Type: | UInt16    |
| Default: | 15 | Change:    | Real-time |

**Value Range:**

0–41

**Description**

Defines the stiffness level of the servo system. The higher the stiffness level, the stronger the gains and the quicker the response will be. But an excessively high stiffness level will cause vibration.

The setpoint 0 indicates the weakest stiffness and 41 indicates the strongest stiffness.

**H09.02 Mode selection of adaptive notch**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-03h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 4        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Adaptive notch no longer updated

1: One adaptive notch activated (3rd notch)

2: Two adaptive notches activated (3rd and 4th notches)

3: Resonance point tested only (displayed in H09.24)

4: Adaptive notch cleared, values of 3rd and 4th notches restored to default

**Description**

Defines the operation mode of the adaptive notch.

**H09.03 Online inertia auto-tuning mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-04h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 3        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: Enabled, changing slowly

2: Enabled, changing normally

3: Enabled, changing quickly

**Description**

Defines whether to enable online inertia auto-tuning and the inertia ratio update speed during online inertia auto-tuning.

**H09.05      Offline inertia auto-tuning mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-06h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Bi-directional

1: Unidirectional

**Description**

Defines the offline inertia auto-tuning mode. The offline inertia auto-tuning function can be enabled through H0d.02.

**H09.06      Max. speed of inertia auto-tuning**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2009-07h | Effective mode: | Real time    |
| Min.:    | 50       | Unit:           | [mm/s]/[rpm] |
| Max.:    | 1000     | Data Type:      | UInt16       |
| Default: | 500      | Change:         | At stop      |

**Value Range:**

50[mm/s]/[rpm]–1000[mm/s]/[rpm]

**Description**

Defines the maximum permissible speed reference in offline inertia auto-tuning mode.

During inertia auto-tuning, the higher the speed, the more accurate the auto-tuned values. Use the default setpoint in general cases.

**H09.07      Time constant for accelerating to max. speed during inertia auto-tuning**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-08h | Effective mode: | Real time |
| Min.:    | 20       | Unit:           | ms        |
| Max.:    | 800      | Data Type:      | UInt16    |
| Default: | 125      | Change:         | At stop   |

**Value Range:**

20 ms to 800 ms

**Description**

Defines the time for the motor to accelerate from 0 [mm/s]/[rpm] to the maximum speed of inertia auto-tuning (H09.06) during offline inertia auto-tuning.

**H09.08 Interval time after an individual inertia auto-tuning**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-09h | Effective mode: | Real time |
| Min.:    | 50       | Unit:           | ms        |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 800      | Change:         | At stop   |

**Value Range:**

50 ms to 10000 ms

**Description**

Defines the interval time between two consecutive speed references when H09.05 (Offline inertia auto-tuning mode) is set to 1 (Positive/Negative triangular wave mode).

**H09.09 Motor rotating distance per inertia auto-tuning**

|          |          |                 |            |
|----------|----------|-----------------|------------|
| Hex:     | 2009-0Ah | Effective mode: | Real time  |
| Min.:    | 0.00     | Unit:           | [mm]/[Rev] |
| Max.:    | 100.00   | Data Type:      | UInt16     |
| Default: | 1.00     | Change:         | Real-time  |

**Value Range:**

0.00[mm]/[Rev]–100.00[mm]/[Rev]

**Description**

Defines the motor revolutions per inertia auto-tuning when H09.05 (Offline inertia auto-tuning mode) is set to 1 (Positive/Negative triangular wave mode).

Note:

When using the offline inertia auto-tuning function, check that the travel distance of the motor at the stop position is larger than the value of H09.09. If not, decrease the value of H09.06 (Maximum speed for inertia auto-tuning) or H09.07 (Time constant of accelerating to max. speed during inertia auto-tuning) properly until the motor travel distance fulfills the requirement.

**H09.11 Vibration threshold**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-0Ch | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0% to 100.0%

**Description**

Defines the warning threshold for current feedback vibration.

**H09.12 Frequency of the 1st notch**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2009-0Dh | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 50       | Unit:      | Hz        |
| Max.:    | 8000     | Data Type: | UInt16    |
| Default: | 8000     | Change:    | Real-time |

**Value Range:**

50 Hz–8000 Hz

**Description**

Defines the center frequency of the notch, which is the mechanical resonance frequency.

In the torque control mode, setting the notch frequency to 4000 Hz deactivates the notch function.

**H09.13 Width level of the 1st notch**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2009-0Eh | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 20       | Data Type: | UInt16    |
| Default: | 2        | Change:    | Real-time |

**Value Range:**

0–20

**Description**

Defines the width level of the notch. Use the default setpoint in general cases.

Width level is the ratio of the notch width to the notch center frequency.

**H09.14 Depth level of the 1st notch**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2009-0Fh | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 99       | Data Type: | UInt16    |
| Default: | 0        | Change:    | Real-time |

**Value Range:**

0–99

**Description**

Defines the depth level of the notch.

The depth level of the notch is the ratio between the input to the output at the notch center frequency.

The higher the setpoint, the lower the notch depth and the weaker the mechanical resonance suppression will be. Note that an excessively high setpoint may cause system instability.

**H09.15 Frequency of the 2nd notch**

Hex: 2009-10h

Effective Real time

mode:

Min.: 50

Unit: Hz

Max.: 8000

Data Type: UInt16

Default: 8000

Change: Real-time

**Value Range:**

50 Hz–8000 Hz

**Description**

-

**H09.16 Width level of the 2nd notch**

Hex: 2009-11h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 20

Data Type: UInt16

Default: 2

Change: Real-time

**Value Range:**

0–20

**Description**

-

**H09.17 Depth level of the 2nd notch**

Hex: 2009-12h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 99

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0–99

**Description**

-

**H09.18 Frequency of the 3rd notch**

Hex: 2009-13h

Effective Real time

mode:

Min.: 50

Unit: Hz

Max.: 8000

Data Type: UInt16

Default: 8000

Change: Real-time

**Value Range:**

50 Hz–8000 Hz



**Description**

-

**H09.19****Width level of the 3rd notch**

Hex: 2009-14h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 20

Data Type: UInt16

Default: 2

Change: Real-time

**Value Range:**

0–20

**Description**

-

**H09.20****Depth level of the 3rd notch**

Hex: 2009-15h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 99

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0–99

**Description**

-

**H09.21****Frequency of the 4th notch**

Hex: 2009-16h

Effective mode: Real time

Min.: 50

Unit: Hz

Max.: 8000

Data Type: UInt16

Default: 8000

Change: Real-time

**Value Range:**

50 Hz–8000 Hz

**Description**

-

**H09.22****Width level of the 4th notch**

Hex: 2009-17h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 20

Data Type: UInt16

Default: 2

Change: Real-time

**Value Range:**

0–20

**Description**

-

**H09.23 Depth level of the 4th notch**

Hex: 2009-18h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 99

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0–99

**Description**

-

**H09.24 Auto-tuned resonance frequency**

Hex: 2009-19h

Effective -

mode:

Min.: 0

Unit: Hz

Max.: 5000

Data Type: UInt16

Default: 0

Change: Unchangeable

**Value Range:**

0 Hz–5000 Hz

**Description**

When H09.02 (Adaptive notch mode) is set to 3, the current mechanical resonance frequency is displayed.

**H09.32 Gravity compensation value**

Hex: 2009-21h

Effective Real time

mode:

Min.: 0.0

Unit: %

Max.: 100.0

Data Type: UInt16

Default: 0.0

Change: Real-time

**Value Range:**

0.0% to 100.0%

**Description**

Defines the gravity compensation value. Setting this parameter properly in vertical axis applications can reduce the falling amplitude upon start.

**H09.33 Positive friction compensation value**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-22h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

0.0% to 100.0%

**Description**

Defines the forward friction compensation value.

**H09.34 Negative friction compensation value**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-23h | Effective mode: | Real time |
| Min.:    | -100.0   | Unit:           | %         |
| Max.:    | 0.0      | Data Type:      | Int16     |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

-100.0% to 0.0%

**Description**

Defines the reverse direction friction compensation value.

**H09.35 Friction compensation speed**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-24h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | -         |
| Max.:    | 20.0     | Data Type:      | UInt16    |
| Default: | 2.0      | Change:         | Real-time |

**Value Range:**

0.0–20.0

**Description**

Defines the friction compensation speed.

**H09.36 Friction compensation speed**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-25h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 19       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Slow mode+Speed reference  
 1: Slow mode+Model speed  
 2: Slow mode+Speed feedback  
 3: Slow mode+Observe speed  
 16: Quick mode +Speed reference  
 17: Quick mode +Model speed  
 18: Quick mode +Speed feedback  
 19: Quick mode+Observe speed

### Description

-

## H09.37 Vibration monitoring time

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-26h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 300      | Change:         | Real-time |

### Value Range:

0–65535

### Description

The resonance detection suppression function is turned off automatically after the time defined by this parameter elapses. To suppress the resonance suppression function, set this parameter to 65536.

## H09.38 Frequency of low-frequency resonance suppression 1 at the mechanical end

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-27h | Effective mode: | Real time |
| Min.:    | 1.0      | Unit:           | Hz        |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 100.0    | Change:         | Real-time |

### Value Range:

1.0 Hz–100.0 Hz

### Description

Set this parameter based on the actual jitter frequency.

## H09.39 Low-frequency resonance suppression 1 at the mechanical end

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2009-28h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 3        | Data Type:      | UInt16    |

Default: 2 Change: At stop

**Value Range:**

0–3

**Description**

Defines different low-frequency resonance suppression types at the mechanical load. Type 1 features the shortest delay.

**H09.44 Frequency of low-frequency resonance suppression 2 at mechanical load end**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-2Dh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | -         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

0.0–100.0

**Description**

Set this parameter based on the actual jitter frequency.

**H09.45 Responsiveness of low-frequency resonance suppression 2 at mechanical load end**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-2Eh | Effective mode: | Real time |
| Min.:    | 0.01     | Unit:           | -         |
| Max.:    | 5.00     | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | Real-time |

**Value Range:**

0.01–5.00

**Description**

Use the default setpoint in general cases. To increase the setpoint, reduce the delay time.

**H09.47 Width of low-frequency resonance suppression 2 at mechanical load end**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-30h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | -         |
| Max.:    | 2.00     | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | Real-time |

**Value Range:**

0.00–2.00

**Description**

Use the default setpoint in general cases. To increase the setpoint, increase the delay time.

**H09.49 Frequency of low-frequency resonance suppression 3 at mechanical load end**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-32h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | -         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

0.0–100.0

**Description**

-

**H09.50 Responsiveness of low-frequency resonance suppression 3 at mechanical load end**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-33h | Effective mode: | Real time |
| Min.:    | 0.01     | Unit:           | -         |
| Max.:    | 5.00     | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | Real-time |

**Value Range:**

0.01–5.00

**Description**

-

**H09.52 Width of low-frequency resonance suppression 3 at mechanical load end**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-35h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | -         |
| Max.:    | 2.00     | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | Real-time |

**Value Range:**

0.00–2.00

**Description**

-

**H09.54 Resonance detection torque threshold**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2009-37h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |       |            |           |
|----------|-------|------------|-----------|
| Min.:    | 0.0   | Unit:      | %         |
| Max.:    | 300.0 | Data Type: | UInt16    |
| Default: | 50.0  | Change:    | Real-time |

**Value Range:**

0.0% to 300.0%

**Description**

If the torque fluctuation exceeds the setpoint, an error will be reported. Setting this parameter to 0 hides the resonance detection function.

**H09.56 Max. overshoot allowed by ETune**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-39h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 2936     | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

Defines the maximum overshoot value allowed during ETune adjustment.

**H09.57 STune resonance suppression switchover frequency**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-3Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | Hz        |
| Max.:    | 4000     | Data Type:      | UInt16    |
| Default: | 650      | Change:         | Real-time |

**Value Range:**

0 Hz–4000 Hz

**Description**

If the resonance frequency is lower than the setpoint, use medium-frequency resonance suppression 2 to suppress resonance. Otherwise, use the notch to suppress resonance.

**H09.58 STune resonance suppression reset selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-3Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Used to enable STune resonance suppression reset to clear parameters related to resonance suppression, medium-frequency resonance suppression 2 and notches 3 and 4.

**H09.62      Stune stop delay judgment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-3Fh | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 50.00    | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | Real-time |

**Value Range:**

0.00 ms to 50.00 ms

**Description**

-

**H09.63      STune quick convergence speed**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-40h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | -         |
| Max.:    | 50.00    | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | Real-time |

**Value Range:**

0.00–50.00

**Description**

-

**H09.71      Starting frequency**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-48h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | Hz        |
| Max.:    | 8000     | Data Type:      | UInt16    |
| Default: | 15       | Change:         | Real-time |

**Value Range:**

0 Hz–8000 Hz

**Description**

-

**H09.72      End frequency**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2009-49h | Effective mode: | Real time |
|------|----------|-----------------|-----------|



|                     |      |            |           |
|---------------------|------|------------|-----------|
| Min.:               | 0    | Unit:      | Hz        |
| Max.:               | 8000 | Data Type: | UInt16    |
| Default:            | 8000 | Change:    | Real-time |
| <b>Value Range:</b> |      |            |           |
| 0 Hz–8000 Hz        |      |            |           |
| <b>Description</b>  |      |            |           |
| -                   |      |            |           |

**H09.73      Frequency subdivision**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2009-4Ah | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 500      | Data Type:      | UInt16    |
| Default:            | 50       | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0–500               |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H09.74      Excitation amplitude**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2009-4Bh | Effective mode: | Real time |
| Min.:               | 0.0      | Unit:           | %         |
| Max.:               | 400.0    | Data Type:      | UInt16    |
| Default:            | 15.0     | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0.0% to 400.0%      |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H09.75      Starting frequency 2**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2009-4Ch | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | Hz        |
| Max.:               | 8000     | Data Type:      | UInt16    |
| Default:            | 500      | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0 Hz–8000 Hz        |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H09.76 Frequency subdivision 2**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-4Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1000     | Data Type:      | UInt16    |
| Default: | 500      | Change:         | Real-time |

**Value Range:**

0–1000

**Description**

-

**H09.77 Biquad filter mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-4Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 6        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: First-order low-pass

2: Second-order low-pass

3: Notch

4: Lead-lag

5: User-defined

**Description**

Used to select biquad filter mode.

**H09.78 Biquad filter numerator frequency**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-4Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | Hz        |
| Max.:    | 16000    | Data Type:      | UInt16    |
| Default: | 8000     | Change:         | Real-time |

**Value Range:**

0 Hz–16000 Hz

**Description**

-

**H09.79 Biquad filter numerator damping coefficient**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2009-50h | Effective mode: | Real time |
| Min.: | 0.001    | Unit:           | -         |

|                     |        |            |           |
|---------------------|--------|------------|-----------|
| Max.:               | 10.000 | Data Type: | UInt16    |
| Default:            | 1.000  | Change:    | Real-time |
| <b>Value Range:</b> |        |            |           |
| 0.001–10.000        |        |            |           |
| <b>Description</b>  |        |            |           |
| -                   |        |            |           |

**H09.80 Biquad filter denominator frequency**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2009-51h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | Hz        |
| Max.:               | 16000    | Data Type:      | UInt16    |
| Default:            | 8000     | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0 Hz–16000 Hz       |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H09.81 Biquad filter denominator damping coefficient**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2009-52h | Effective mode: | Real time |
| Min.:               | 0.001    | Unit:           | -         |
| Max.:               | 10.000   | Data Type:      | UInt16    |
| Default:            | 1.000    | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0.001–10.000        |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

## 2.11 H0A Fault and Protection Parameters

**H0A.00 Power input phase loss protection**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 200A-01h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 1        | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0: Enable           |          |                 |           |
| 1: Disable          |          |                 |           |

**Description**

Servo drives supporting single-phase/three-phase 220 V and three-phase 380 V power supplies are available. When voltage fluctuation or phase loss occurs on the power supply, the drive triggers power input phase loss protection based on H0A.00.

**H0A.01 Absolute position limit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-02h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: Enabled

2: Enabled after homing

**Description**

Used to set the activation condition for enabling the software position limit function and the software limit.

**H0A.04 Motor overload protection gain**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-05h | Effective mode: | Real time |
| Min.:    | 50       | Unit:           | -         |
| Max.:    | 300      | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

**Value Range:**

50–300

**Description**

Determines the motor overload duration before E620.0 (Motor overload) is reported.

You can change the setpoint to advance or delay the time when overload protection is triggered based on the motor temperature. The setpoint 50% indicates the time is cut by half; 150% indicates the time is increased by 50%. Set this parameter based on the actual temperature of the motor.

**H0A.08 Overspeed threshold**

|       |          |                 |              |
|-------|----------|-----------------|--------------|
| Hex:  | 200A-09h | Effective mode: | Real time    |
| Min.: | 0        | Unit:           | [mm/s]/[rpm] |
| Max.: | 20000    | Data Type:      | UInt16       |

Default: 0

Change: Real-time

**Value Range:**

0[mm/s]/[rpm]–20000[mm/s]/[rpm]

**Description**

Defines the overspeed threshold of the motor.

| Value   | Threshold                                                                                        | Condition for Reporting E500.0                                                                                   |
|---------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|
| 0       | Maximum motor speed x 1.2                                                                        | If the speed feedback exceeds the overspeed threshold several times, the drive reports E500.0 (Motor overspeed). |
| 1–20000 | If H0A-08 $\geq$ (Maximum motor speed x 1.2):<br>Overspeed threshold = Maximum motor speed x 1.2 |                                                                                                                  |
|         | If H0A-08 < (Maximum motor speed x 1.2):<br>Overspeed threshold = H0A.08                         |                                                                                                                  |

**H0A.09 Max. pulse input frequency in position control**

Hex: 200A-0Ah

Effective Real time

mode:

Min.: 100

Unit: kHz

Max.: 16000

Data Type: UInt16

Default: 16000

Change: At stop

**Value Range:**

100 kHz–16000 kHz

**Description**

Defines the maximum frequency of input pulses when the position reference source is pulse reference (H05.00 = 0) in the position control mode.

When the actual pulse input frequency exceeds the value of H0A.09, the drive reports EB01.0 (Position reference input error).

**H0A.10 Threshold of excessive local position deviation**

Hex: 200A-0Bh

Effective Real time

mode:

Min.: 0

Unit: Encoder unit

Max.: 4294967295

Data Type: UInt32

Default: 219895614

Change: Real-time

**Value Range:**

0 to 4294967295

**Description**

Defines the threshold for excessive position deviation in the position control mode.

When the position deviation exceeds this threshold, the drive reports EB00.0 (Position deviation too large).

#### **H0A.12 Runaway protection enable**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-0Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

##### **Value Range:**

0: Disable

1: Enable

##### **Description**

Defines whether to enable runaway protection.

0: Disables E234.0 detection when the motor drives a vertical axis or is driven by the load

1: Enables runaway protection

#### **H0A.13 Angle auto-tuning mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-0Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 10       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

##### **Value Range:**

0: pre-positioning

1: Inching

6: Static hall

8: Closed-loop pre-positioning

9: Position locking

##### **Description**

Selects the motor angle auto-tuning mode:

0: pre-positioning

1: Inching

6: Static hall

8: Closed-loop pre-positioning

9: Position locking

**H0A.17****Reference pulse selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-12h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Pulse unit

1: Reference unit

**Description**

Used to set the threshold unit for large position deviation, positioning completion, and positioning proximity.

**H0A.18****IGBT over-temperature threshold**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-13h | Effective mode: | Real time |
| Min.:    | 120      | Unit:           | °C        |
| Max.:    | 175      | Data Type:      | UInt16    |
| Default: | 140      | Change:         | Real-time |

**Value Range:**

120°C–175°C

**Description**

Defines the threshold for reporting E640.0 (IGBT overtemperature) and E640.1 (Flywheel diode overtemperature).

**H0A.19****Filter time constant of touch probe 1**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-14h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | us        |
| Max.:    | 6.30     | Data Type:      | UInt16    |
| Default: | 2.00     | Change:         | Real-time |

**Value Range:**

0.00us–6.30us

**Description**

Defines the filter time of touch probe 1. An active input must last for the time defined by H0A.19.

**H0A.20****Filter time constant of touch probe 2**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 200A-15h | Effective mode: | Real time |
| Min.: | 0.00     | Unit:           | us        |

Max.: 6.30

Data Type: UInt16

Default: 2.00

Change: Real-time

**Value Range:**

0.00us–6.30us

**Description**

Defines the filter time of touch probe 2. An active input must last for the time defined by H0A.20.

**H0A.21 STO function display selection**

Hex: 200A-16h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 7

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0–7

**Description**

Defines whether to display the STO status or report E150.0 after the STO function is triggered.

0: Displays the STO status. The keypad displays "sto\_" after the STO function is triggered. In this case, no fault is reported and no output is generated from the fault DO.

1: Displays the STO fault. The keypad displays "E150.0" after the STO function is triggered. In this case, the dive reports the fault and the faulty DO outputs.

**H0A.23 TZ signal filter time**

Hex: 200A-18h

Effective Upon the next power-on

mode:

Min.: 0

Unit: 25ns

Max.: 31

Data Type: UInt16

Default: 15

Change: At stop

**Value Range:**

0–31

**Description**

-

**H0A.24 Filter time constant of low-speed pulse input terminal**

Hex: 200A-19h

Effective Upon the next power-on

mode:

Min.: 0

Unit: 25ns

Max.: 255

Data Type: UInt16



Default: 30

Change: At stop

**Value Range:**

0–255

**Description**

Defines the filter time constant of low-speed pulse input terminal which is enabled (H05.01 = 0) when the position reference source is pulse input (H05.00 = 0) in the position control mode.

When peak interference exists in the low-speed pulse input terminal, set this parameter to suppress peak interference and prevent motor malfunction due to interference signal inputted to the servo drive.

**H0A.25 Speed display DO low-pass filter time**

Hex: 200A-1Ah

Effective mode: Real time

Min.: 0

Unit: ms

Max.: 5000

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0 ms to 5000 ms

**Description**

Defines the low-pass filter time constant of the speed information for speed feedback and position references.

**H0A.26 Motor overload detection**

Hex: 200A-1Bh

Effective mode: Real time

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Show motor overload warning (E909.0) and fault (E620.0)

1: Hide motor overload warning (E909.0) and fault (E620.0)

**Description**

Defines whether to enable motor overload detection.

**H0A.27 Average filter time for speed display DO**

Hex: 200A-1Ch

Effective mode: Real time

Min.: 0

Unit: ms

Max.: 100

Data Type: UInt16

Default: 50

Change: At stop

**Value Range:**

0 ms to 100 ms

**Description**

Defines the average filter time constant of the speed information for speed feedback and position references.

**H0A.28      Quadrature encoder filter time**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200A-1Dh | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | 25ns                   |
| Max.:    | 255      | Data Type:      | UInt16                 |
| Default: | 2        | Change:         | At stop                |

**Value Range:**

0–255

**Description**

Defines the quadrature encoder feedback filter time.

**H0A.29      Fully closed-loop encoder (ABZ) filter time**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200A-1Eh | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | 25ns                   |
| Max.:    | 65535    | Data Type:      | UInt16                 |
| Default: | 4111     | Change:         | At stop                |

**Value Range:**

0–65535

**Description**

-

**H0A.30      Filter time constant of high-speed pulse input terminal**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200A-1Fh | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | ns                     |
| Max.:    | 255      | Data Type:      | UInt16                 |
| Default: | 2        | Change:         | At stop                |

**Value Range:**

0 ns to 255 ns

**Description**

-

**H0A.32      Time threshold for locked motor overhear protection**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 200A-21h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |       |            |           |
|----------|-------|------------|-----------|
| Min.:    | 10    | Unit:      | ms        |
| Max.:    | 65535 | Data Type: | UInt16    |
| Default: | 200   | Change:    | Real-time |

**Value Range:**

10 ms to 65535 ms

**Description**

Defines the overtemperature duration before E630.0 (Motor stall) is detected by the servo drive.

H0A.32 can be used to adjust the sensitivity of motor stall overtemperature detection.

**H0A.33 Locked motor overheat protection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-22h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Enables or disables the detection for E630.0 (Motor stall overtemperature protection).

**H0A.36 Encoder multi-turn overflow fault selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-25h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Not hide

1: Hide

**Description**

Defines whether to hide the encoder multi-turn overflow fault in the absolute position linear mode (H02.01 = 1).

**H0A.40 Compensation function selection**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 200A-29h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 31       | Data Type:      | UInt16    |

Default: 6

Change: At stop

**Value Range:**

| bit | Name                               | Description                    |
|-----|------------------------------------|--------------------------------|
| 0   | Overtravel compensation            | 0: Enabled                     |
|     |                                    | 1: Disabled                    |
| 1   | Probe rising edge compensation     | 0: Disabled                    |
|     |                                    | 1: Enabled                     |
| 2   | Probe falling edge compensation    | 0: Disabled                    |
|     |                                    | 1: Enabled                     |
| 3   | Probe scheme                       | 0: New scheme                  |
|     |                                    | 1: Old scheme (same as SV660N) |
| 4   | Probe 2 separate compensation time | 0: Disabled                    |
|     |                                    | 1: Enabled                     |

**Description**

-

**H0A.41****Forward position of software position limit**

Hex: 200A-2Ah

Effective mode: Real time

Min.: -2147483648

Unit: Encoder unit

Max.: 2147483647

Data Type: Int32

Default: 2147483647

Change: At stop

**Value Range:**

-2147483648 to 2147483647

**Description**

When the absolute position counter (H0b.07) is larger than H0A.41, the servo drive reports E950.0 (Forward limit switch warning) and executes stop at forward limit.

**H0A.43****Reverse position of software position limit**

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 200A-2Ch    | Effective mode: | Real time    |
| Min.:    | -2147483648 | Unit:           | Encoder unit |
| Max.:    | 2147483647  | Data Type:      | Int32        |
| Default: | -2147483648 | Change:         | At stop      |

**Value Range:**

-2147483648 to 2147483647

**Description**

When the absolute position counter (H0b.07) is smaller than H0A.43, the servo drive reports warning E952.0 (Reverse limit switch warning) and executes stop at reverse limit.

**H0A.50****Encoder communication fault tolerance threshold**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200A-33h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 31       | Data Type:      | UInt16                 |
| Default: | 31       | Change:         | Real-time              |

**Value Range:**

0–31

**Description**

When the communication between the encoder and the drive fails continuously for more than H0A.50 times, it is considered as a communication failure with the encoder. When overspeed point mask is enabled, if the number of consecutive overspeed points exceed H0A.50, it is considered as a communication failure with the encoder.

**H0A.51****Phase loss detection filter times**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-34h | Effective mode: | Real time |
| Min.:    | 3        | Unit:           | 55ms      |
| Max.:    | 36       | Data Type:      | UInt16    |
| Default: | 20       | Change:         | Real-time |

**Value Range:**

3–36

**Description**

Phase loss fault is reported when phase loss keeps active for a period longer than H0A.51.

**H0A.52****Encoder temperature protection threshold**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 200A-35h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | °C        |
| Max.:    | 175      | Data Type: | UInt16    |
| Default: | 120      | Change:    | Real-time |

**Value Range:**

0°C–175°C

**Description**

Defines the temperature threshold for encoder overtemperature protection.

**H0A.53****Probe DI ON compensation time**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 200A-36h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | -3000    | Unit:      | 25ns      |
| Max.:    | 3000     | Data Type: | Int16     |
| Default: | 200      | Change:    | Real-time |

**Value Range:**

-3000–3000

**Description**

Used to compensate for the action time when the touch probe is switched on.

**H0A.54****Probe DI OFF compensation time**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 200A-37h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | -3000    | Unit:      | 25ns      |
| Max.:    | 3000     | Data Type: | Int16     |
| Default: | 1512     | Change:    | Real-time |

**Value Range:**

-3000–3000

**Description**

Used to compensate for the action time when the touch probe is switched off.

**H0A.55****Runaway current threshold**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 200A-38h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 100.0    | Unit:      | %         |
| Max.:    | 400.0    | Data Type: | UInt16    |
| Default: | 200.0    | Change:    | Real-time |

**Value Range:**

100.0% to 400.0%

**Description**

Defines the current threshold for runaway protection detection.

**H0A.56****Fault reset delay**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-39h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 60000    | Data Type:      | UInt16    |
| Default: | 10000    | Change:         | Real-time |

**Value Range:**

0 ms to 60000 ms

**Description**

-

**H0A.57****Runaway speed threshold**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200A-3Ah | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 1000     | Data Type:      | UInt16       |
| Default: | 50       | Change:         | Real-time    |

**Value Range:**

1[mm/s]/[rpm]–1000[mm/s]/[rpm]

**Description**

Defines the overspeed threshold for runaway protection detection.

**H0A.58****Runaway speed filter time**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200A-3Bh | Effective mode: | Upon the next power-on |
| Min.:    | 0.1      | Unit:           | ms                     |
| Max.:    | 100.0    | Data Type:      | UInt16                 |
| Default: | 2.0      | Change:         | Real-time              |

**Value Range:**

0.1 ms to 100.0 ms

**Description**

Defines the speed feedback filter time for runaway protection detection.

**H0A.59****Runaway protection detection time**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 200A-3Ch | Effective mode: | Real time |
| Min.: | 10       | Unit:           | ms        |
| Max.: | 1000     | Data Type:      | UInt16    |

Default: 30

Change: Real-time

**Value Range:**

10 ms to 1000 ms

**Description**

The runaway fault will be reported when runaway keeps active for a period longer than H0A.59.

**H0A.60****Black box function mode**

Hex: 200A-3Dh

Effective mode: Real time

Min.: 0

Unit: -

Max.: 3

Data Type: UInt16

Default: 1

Change: Real-time

**Value Range:**

0: Disable

1: Any fault

2: Designated fault

3: Triggered based on designated condition

**Description**

Defines the condition for triggering black box sampling.

**H0A.61****Designated fault code**

Hex: 200A-3Eh

Effective mode: Real time

Min.: 0.0

Unit: -

Max.: 6553.5

Data Type: UInt16

Default: 0.0

Change: Real-time

**Value Range:**

0.0–6553.5

**Description**

Defines the fault code for triggering the black box function.

**H0A.62****Trigger source**

Hex: 200A-3Fh

Effective mode: Real time

Min.: 0

Unit: -

Max.: 25

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0–25



**Description**

Defines the fault code for triggering the black box function through designated channel.

**H0A.63****Trigger level**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 200A-40h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

Defines the trigger level for triggering the black box function through designated channel.

**H0A.65****Trigger level**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-42h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 3        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Rising edge

1: Equal

2: Falling edge

3: Edge-triggered

**Description**

Defines the trigger mode for triggering the black box function through H0A.63.

**H0A.66****Trigger position**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-43h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | %         |
| Max.:    | 100      | Data Type:      | UInt16    |
| Default: | 75       | Change:         | Real-time |

**Value Range:**

0% to 100%

**Description**

Defines the pre-trigger position for triggering black box sampling.

**H0A.67****Sampling frequency**

Hex: 200A-44h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 2

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Current loop

1: Position loop

2: Main cycle

**Description**

Defines the frequency sampling mode during black box sampling.

**H0A.70****Overspeed threshold 2**

Hex: 200A-47h

Effective Real time

mode:

Min.: 0

Unit: [mm/s]/[rpm]

Max.: 20000

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0[mm/s]/[rpm]–20000[mm/s]/[rpm]

**Description**

Defines the speed threshold for reporting E500.2 (Position feedback pulse overspeed).

**H0A.71****Internal function switch**

Hex: 200A-48h

Effective Upon the next power-on

mode:

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 4098

Change: Real-time

**Value Range:**

0–65535

**Description**

| bit | Function                       | Description                                                                                        |
|-----|--------------------------------|----------------------------------------------------------------------------------------------------|
| 0   | Motor overload curve selection | 0: New motor overload curve<br>1: Old motor overload curve                                         |
| 1   | Power failure bleeder switch   | 0: Enable regenerative switch upon power failure<br>1: Hide regenerative switch upon power failure |
| 2   | Forced brake motor stop mode   | 0: Forced stop<br>1: Non-forced stop                                                               |

| bit | Function                                                            | Description                                                                                                                       |
|-----|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 3   | New external characteristics switch of multi-speed DI mode          | 0: New characteristics<br>1: Old characteristics                                                                                  |
| 4   | E120.3 hide switch                                                  | 0: Hide<br>1: Do not hide                                                                                                         |
| 5   | Prohibit software reading parameters                                | 0: Disabled<br>1: Enabled                                                                                                         |
| 6   | E108.4 hide switch                                                  | 0: Do not hide<br>1: Hide                                                                                                         |
| 7   | CSV command interpolation                                           | 0: Sync interrupt interpolation<br>1: IRQ interrupt interpolation                                                                 |
| 8   | Data type of motor rated current, inertia, and back EMF coefficient | 0: 16-bit<br>1: 32-bit                                                                                                            |
| 9   | Wire breakage detection                                             | 0: Enabled<br>1: Disabled                                                                                                         |
| 10  | Torque limit source                                                 | 0: Auto switch acc. to H02.00<br>1: Set by H07.09 and H07.10                                                                      |
| 11  | Ultra-accurate speed feedback switch                                | 0: Off<br>1: On                                                                                                                   |
| 12  | Power failure retention of homing completion flag                   | 0: Disabled<br>1: Enabled                                                                                                         |
| 13  | STO status word fallback switch                                     | 0: Switch on disable<br>1: Fault                                                                                                  |
| 14  | Encoder adaptive function switch                                    | 0: On<br>1: Off                                                                                                                   |
| 15  | Interrupt positioning external characteristics                      | 0: Old external characteristics, follows motor operation direction<br>1: New external characteristics, direction set by parameter |

**H0A.72 Maximum stop time in ramp-to-stop**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-49h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10000    | Change:         | At stop   |

**Value Range:**

0 ms to 65535 ms

**Description**

Defines the time for the motor to decelerate from the maximum speed to 0 [mm/s]/[rpm] during ramp-to-stop.

**H0A.73 STO 24 V disconnection filter time**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 200A-4Ah | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 1        | Unit:      | ms        |
| Max.:    | 5        | Data Type: | UInt16    |
| Default: | 1        | Change:    | Real-time |

**Value Range:**

1 ms to 5 ms

**Description**

Defines the delay from the moment when 24V is disconnected to the moment when the STO state applies.

**H0A.74 Filter time for two inconsistent STO channels**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 200A-4Bh | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 1        | Unit:      | ms        |
| Max.:    | 1000     | Data Type: | UInt16    |
| Default: | 100      | Change:    | Real-time |

**Value Range:**

1 ms to 1000 ms

**Description**

Defines the delay from the moment the inconsistent 24V is input to the drive through two channels to the moment when the STO state applies.

**H0A.75 Servo OFF delay after STO triggered**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 200A-4Ch | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | ms        |
| Max.:    | 25       | Data Type: | UInt16    |
| Default: | 20       | Change:    | Real-time |

**Value Range:**

0 ms to 25 ms

**Description**

Defines the delay from the moment the STO state is triggered to the moment the S-ON signal is switched off.

**H0A.87 UUV Hall state monitoring window**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 200A-58h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 1000     | Data Type: | UInt16    |
| Default: | 1        | Change:    | Real-time |

**Value Range:**

0–1000

**Description**

Defines the Hall signal filter time.

**H0A.88 DDL BiSS-C data alarm enable**

Hex: 200A-59h

Effective mode: Upon the next power-on

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0–1

**Description**

Used to enable original BiSS-C data alarm function, which is only applicable to the encoder that adopts BiSS-C protocol.

**H0A.89 Correct state of DDL BiSS-C data**

Hex: 200A-5Ah

Effective mode: Upon the next power-on

Min.: 0

Unit: -

Max.: 31

Data Type: UInt16

Default: 1

Change: At stop

**Value Range:**

0–31

**Description**

Defines the fault bit state during normal operation of BiSS-C.

**H0A.90 Speed display low-pass filter time**

Hex: 200A-5Bh

Effective mode: Real time

Min.: 0

Unit: ms

Max.: 100

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0 ms to 100 ms

**Description**

Defines the low-pass filter time constant for displayed speed values.

**H0A.91 Moving average filter time for torque display values**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-5Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 100      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0 ms to 100 ms

**Description**

Defines the moving average filter time constant for torque display values.

**H0A.92 Moving average filter time for position display values**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-5Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 100      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0 ms to 100 ms

**Description**

Defines the moving average filter time constant for position display values.

**H0A.93 Low-pass filter time for voltage display values**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-5Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 250      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0 ms to 250 ms

**Description**

Defines the low-pass filter time constant for voltage display values.

**H0A.94 Low-pass filter time for thermal display values**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-5Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 250      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0 ms to 250 ms

**Description**

Defines the filter time constant for thermal display values.

## 2.12 H0b Monitoring Parameters

**H0b.00 Motor speed actual value**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-01h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | -32767   | Unit:      | [mm/s]/[rpm] |
| Max.:    | 32767    | Data Type: | Int16        |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

-32767[mm/s]/[rpm]–32767[mm/s]/[rpm]

**Description**

Indicates the actual motor speed after round-off, which is accurate to 1 [mm/s]/[rpm].

Set in H0A.25 (Filter time constant of speed feedback display) the filter time constant for H0b.00.

**H0b.01 Speed reference**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-02h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | -32767   | Unit:      | [mm/s]/[rpm] |
| Max.:    | 32767    | Data Type: | Int16        |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

-32767[mm/s]/[rpm]–32767[mm/s]/[rpm]

**Description**

Indicates the present speed reference (accurate to 1 [mm/s]/[rpm]) of the drive in the position and speed control modes.

**H0b.02 Internal torque reference**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-03h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | -500.0   | Unit:      | %            |
| Max.:    | 500.0    | Data Type: | Int16        |
| Default: | 0.0      | Change:    | Unchangeable |

**Value Range:**

-500.0% to 500.0%

**Description**

Displays present torque reference (accurate to 0.1%). The value 100.0% corresponds to the rated torque of the motor.

**H0b.03 Input (DI) signal monitoring**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-04h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Displays the level status of eight DI terminals without filtering.

Upper LED segments ON: high level (indicated by "1") Lower LED segments ON: low level (indicated by "0")

**H0b.05 Output (DO) signal monitoring**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-06h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Displays the level status of 5 DO terminals without filtering.

Upper LED segments ON: high level (indicated by "1") Lower LED segments ON: low level (indicated by "0")

**H0b.07 Absolute position counter**

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 200b-08h    | Effective mode: | -            |
| Min.:    | -2147483648 | Unit:           | p            |
| Max.:    | 2147483647  | Data Type:      | Int32        |
| Default: | 0           | Change:         | Unchangeable |

**Value Range:**

-2147483648p to 2147483647p

**Description**



Indicates present absolute position (reference unit) of the motor in the position control mode.  
This parameter is a 32-bit integer, which is displayed as a decimal on the keypad.

**H0b.09 Mechanical angle**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-0Ah | Effective mode: | -            |
| Min.:    | 0.0      | Unit:           | °            |
| Max.:    | 360.0    | Data Type:      | UInt16       |
| Default: | 0.0      | Change:         | Unchangeable |

**Value Range:**

0.0° to 360.0°

**Description**

Displays present mechanical angle (encoder unit) of the motor. The setpoint 0 indicates the mechanical angle is 0°.

Actual mechanical angle =  $360^\circ \times \text{H0b.09} / (\text{Maximum value of H0b.09} + 1)$

Maximum value of H0b.09 for an absolute encoder is 65535.

**H0b.10 Electrical angle**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-0Bh | Effective mode: | -            |
| Min.:    | 0.0      | Unit:           | °            |
| Max.:    | 360.0    | Data Type:      | UInt16       |
| Default: | 0.0      | Change:         | Unchangeable |

**Value Range:**

0.0° to 360.0°

**Description**

Indicates the present electrical angle of the motor, which is accurate to 0.1°.

The electrical angle variation range is  $\pm 360.0^\circ$  during rotation. If the motor has four pairs of poles, each revolution generates four rounds of angle change from 0° to 359°. Similarly, if the motor has five pairs of poles, each revolution generates five rounds of angle change from 0° to 359°.

**H0b.12 Average load ratio**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-0Dh | Effective mode: | -            |
| Min.:    | 0.0      | Unit:           | %            |
| Max.:    | 800.0    | Data Type:      | UInt16       |
| Default: | 0.0      | Change:         | Unchangeable |

**Value Range:**

0.0% to 800.0%

**Description**

Displays the percentage of the average load torque to the rated torque of the motor, which is accurate to 0.1%. The value 100.0% corresponds to the rated torque of the motor.

**H0b.13 Input reference counter**

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 200b-0Eh    | Effective mode: | -            |
| Min.:    | -2147483648 | Unit:           | p            |
| Max.:    | 2147483647  | Data Type:      | Int32        |
| Default: | 0           | Change:         | Unchangeable |

**Value Range:**

-2147483648p to 2147483647p

**Description**

Used to count and display the number of position references not divided or multiplied by the electronic gear ratio during operation.

This parameter is a 32-bit integer, which is displayed as a decimal on the keypad.

**H0b.15 Position following error (encoder unit)**

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 200b-10h    | Effective mode: | -            |
| Min.:    | -2147483648 | Unit:           | p            |
| Max.:    | 2147483647  | Data Type:      | Int32        |
| Default: | 0           | Change:         | Unchangeable |

**Value Range:**

-2147483648p to 2147483647p

**Description**

Used to count and display the position deviation value after being divided or multiplied by the electronic gear ratio in the position control mode.

This parameter is a 32-bit integer, which is displayed as a decimal on the keypad.

Note:

H0b.15 can be clear when the condition defined in H05.16 (Clear action) is met.

**H0b.17 Feedback pulse counter**

|       |             |                 |   |
|-------|-------------|-----------------|---|
| Hex:  | 200b-12h    | Effective mode: | - |
| Min.: | -2147483648 | Unit:           | p |

|          |            |            |              |
|----------|------------|------------|--------------|
| Max.:    | 2147483647 | Data Type: | Int32        |
| Default: | 0          | Change:    | Unchangeable |

**Value Range:**

-2147483648p to 2147483647p

**Description**

Used to count the position pulses fed back by the encoder in any control mode.  
This parameter is a 32-bit integer, which is displayed as a decimal on the keypad.

**H0b.19 Total power-on time**

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 200b-14h    | Effective mode: | -            |
| Min.:    | 0.0         | Unit:           | s            |
| Max.:    | 429496729.5 | Data Type:      | UInt32       |
| Default: | 0.0         | Change:         | Unchangeable |

**Value Range:**

0.0s–429496729.5s

**Description**

Used to record the total operating time of the servo drive.  
This parameter is a 32-bit integer, which is displayed as a decimal on the keypad.

Note:

If the servo drive is switched on and off repeatedly within a short period of time, a deviation within 1h may be present in the total power-on time record.

**H0b.21 Displayed AI1 voltage**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-16h | Effective mode: | -            |
| Min.:    | -12.00   | Unit:           | V            |
| Max.:    | 12.00    | Data Type:      | Int16        |
| Default: | 0.00     | Change:         | Unchangeable |

**Value Range:**

-12.00 V–12.00 V

**Description**

Displays the actual sampling voltage of AI1.

**H0b.22 Displayed AI2 voltage**

|       |          |                 |       |
|-------|----------|-----------------|-------|
| Hex:  | 200b-17h | Effective mode: | -     |
| Min.: | -12.00   | Unit:           | V     |
| Max.: | 12.00    | Data Type:      | Int16 |

Default: 0.00

Change: Unchangeable

**Value Range:**

-12.00 V–12.00 V

**Description**

Displays the actual sampling voltage of AI2.

**H0b.24 Phase current RMS value**

Hex: 200b-19h

Effective mode: -

Min.: 0.0

Unit: A

Max.: 6553.5

Data Type: UInt16

Default: 0.0

Change: Unchangeable

**Value Range:**

0.0 A–6553.5 A

**Description**

Displays the RMS value of the phase current of the motor, accurate to 0.01 A.

**H0b.25 Angle obtained upon voltage injection auto-tuning**

Hex: 200b-1Ah

Effective mode: -

Min.: 0.0

Unit: °

Max.: 360.0

Data Type: UInt16

Default: 0.0

Change: Unchangeable

**Value Range:**

0.0° to 360.0°

**Description**

-

**H0b.26 Bus voltage**

Hex: 200b-1Bh

Effective mode: -

Min.: 0.0

Unit: V

Max.: 6553.5

Data Type: UInt16

Default: 0.0

Change: Unchangeable

**Value Range:**

0.0 V–6553.5 V

**Description**

Displays the DC bus voltage of the main circuit input voltage after rectification, which is accurate to 0.01 V.

**H0b.27      Module temperature**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-1Ch | Effective mode: | -            |
| Min.:    | -20      | Unit:           | °C           |
| Max.:    | 200      | Data Type:      | Int16        |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

-20°C–200°C

**Description**

Indicates the temperature of the module inside the servo drive, which can be used as a reference for estimating the actual temperature of the drive.

**H0b.28      Absolute encoder fault information given by FPGA**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-1Dh | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0b.29      Axis status information given by FPGA**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-1Eh | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0b.30      Axis fault information given by FPGA**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-1Fh | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0b.31 Encoder fault information**

Hex: 200b-20h

Effective -

mode:

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: Unchangeable

**Value Range:**

0–65535

**Description**

-

**H0b.33 Fault log**

Hex: 200b-22h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 20

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Present fault

1: Last fault

2: 2nd to last fault

3: 3rd to last fault

4: 4th to last fault

5: 5th to last fault 6: 6th to last fault

7: 7th to last fault

8: 8th to last fault

9: 9th to last fault

10: 10th to last fault

11: 11th to last fault

12: 12th to last fault

13: 13th to last fault

14: 14th to last fault

15: 15th to last fault

16: 16th to last fault

17: 17th to last fault

18: 18th to last fault

19: 19th to last fault

**Description**

Used to view the latest 20 faults of the drive.

**H0b.34 Fault code of the selected fault**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-23h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**  
0–65535

**Description**  
-

**H0b.35 Timestamp of the selected fault**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 200b-24h    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | 0.0         | Unit:      | s            |
| Max.:    | 429496729.5 | Data Type: | UInt32       |
| Default: | 0.0         | Change:    | Unchangeable |

**Value Range:**  
0.0s–429496729.5s

**Description**  
-

**H0b.37 Motor speed upon occurrence of the selected fault**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-26h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | -32767   | Unit:      | [mm/s]/[rpm] |
| Max.:    | 32767    | Data Type: | Int16        |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**  
-32767[mm/s]/[rpm]–32767[mm/s]/[rpm]

**Description**  
-

**H0b.38 Motor phase U current upon occurrence of the selected fault**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-27h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | -3276.7  | Unit:      | A            |
| Max.:    | 3276.7   | Data Type: | Int16        |
| Default: | 0.0      | Change:    | Unchangeable |

**Value Range:**  
-3276.7 A–3276.7 A

**Description**

-

**H0b.39 Motor phase V current upon occurrence of the selected fault**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-28h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | -3276.7  | Unit:      | A            |
| Max.:    | 3276.7   | Data Type: | Int16        |
| Default: | 0.0      | Change:    | Unchangeable |

**Value Range:**

-3276.7 A–3276.7 A

**Description**

-

**H0b.40 Bus voltage upon occurrence of the selected fault**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-29h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0.0      | Unit:      | V            |
| Max.:    | 6553.5   | Data Type: | UInt16       |
| Default: | 0.0      | Change:    | Unchangeable |

**Value Range:**

0.0 V–6553.5 V

**Description**

-

**H0b.41 Input terminal state on selected fault**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-2Ah | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0b.43 Output terminal status upon occurrence of the selected fault**

|       |          |            |        |
|-------|----------|------------|--------|
| Hex:  | 200b-2Ch | Effective  | -      |
|       |          | mode:      |        |
| Min.: | 0        | Unit:      | -      |
| Max.: | 65535    | Data Type: | UInt16 |



Default: 0

Change: Unchangeable

**Value Range:**

0–65535

**Description**

-

**H0b.45 Internal fault code**

Hex: 200b-2Eh

Effective -

mode:

Unit: -

Min.: 0

Max.: 65535

Data Type: UInt16

Default: 0

Change: Unchangeable

**Value Range:**

0–65535

**Description**

-

**H0b.46 Absolute encoder fault information given by FPGA upon occurrence of the selected fault**

Hex: 200b-2Fh

Effective -

mode:

Unit: -

Min.: 0

Max.: 65535

Data Type: UInt16

Default: 0

Change: Unchangeable

**Value Range:**

0–65535

**Description**

-

**H0b.47 System status information given by FPGA upon occurrence of the selected fault**

Hex: 200b-30h

Effective -

mode:

Unit: -

Min.: 0

Max.: 65535

Data Type: UInt16

Default: 0

Change: Unchangeable

**Value Range:**

0–65535

**Description**

-

**H0b.48      System fault information given by FPGA upon occurrence of the selected fault**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-31h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0b.49      Encoder fault information upon occurrence of the selected fault**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-32h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0b.51      Internal fault code upon occurrence of the selected fault**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-34h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0b.52      FPGA timeout fault standard bit upon occurrence of the selected fault**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-35h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0b.53 Position following error (reference unit)**

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 200b-36h    | Effective mode: | -            |
| Min.:    | -2147483648 | Unit:           | p            |
| Max.:    | 2147483647  | Data Type:      | Int32        |
| Default: | 0           | Change:         | Unchangeable |

**Value Range:**

-2147483648p to 2147483647p

**Description**

Indicates the position deviation value which has not been divided or multiplied by the electronic gear ratio in the position control mode.

Position deviation (reference unit) is the value obtained after enoder position deviation calculation. The precision is compromised during division.

This parameter is a 32-bit integer, which is displayed as a decimal on the keypad.

**H0b.55 Motor speed actual value**

|          |               |                 |              |
|----------|---------------|-----------------|--------------|
| Hex:     | 200b-38h      | Effective mode: | -            |
| Min.:    | -2147483648.0 | Unit:           | [mm/s]/[rpm] |
| Max.:    | 2147483647.0  | Data Type:      | Int32        |
| Default: | 0.0           | Change:         | Unchangeable |

**Value Range:**

-2147483648.0[mm/s]/[rpm]–2147483647.0[mm/s]/[rpm]

**Description**

Displays the actual motor speed, accurate to 0.1 [mm/s]/[rpm].

This parameter is a 32-bit integer, which is displayed as a decimal on the keypad.

H0A.25 (Filter time constant of speed feedback display) can be used to set the filter time constant of the speed feedback.

**H0b.57 Control circuit bus voltage**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-3Ah | Effective mode: | -            |
| Min.:    | 0.0      | Unit:           | V            |
| Max.:    | 6553.5   | Data Type:      | UInt16       |
| Default: | 0.0      | Change:         | Unchangeable |

**Value Range:**

0.0 V–6553.5 V

**Description**

Displays the bus voltage of the control circuit.

**H0b.58 Mechanical absolute position (low 32 bits)**

|          |            |                 |              |
|----------|------------|-----------------|--------------|
| Hex:     | 200b-3Bh   | Effective mode: | -            |
| Min.:    | 0          | Unit:           | p            |
| Max.:    | 4294967295 | Data Type:      | UInt32       |
| Default: | 0          | Change:         | Unchangeable |

**Value Range:**

0p to 4294967295p

**Description**

Displays the low 32-bit value (encoder unit) of the mechanical position feedback when the absolute encoder is used.

**H0b.60 Mechanical absolute position (high 32 bits)**

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 200b-3Dh    | Effective mode: | -            |
| Min.:    | -2147483648 | Unit:           | p            |
| Max.:    | 2147483647  | Data Type:      | Int32        |
| Default: | 0           | Change:         | Unchangeable |

**Value Range:**

-2147483648p to 2147483647p

**Description**

Displays the high 32-bit value (encoder unit) of the mechanical position feedback when the absolute encoder is used.

**H0b.63 NotRdy state**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-40h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 9        | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

- 0: Normal
- 1: Control circuit error
- 2: Main circuit power input error
- 3: Bus undervoltage
- 4: Soft start failed
- 5: Encoder initialization undone
- 6: Short circuit to ground failed
- 7: Others
- 9: Fully closed-loop encoder initialization not completed

**Description**  
Displays the reason for the NRD state.

**H0b.64      Real-time input position reference counter**

|          |             |            |                |
|----------|-------------|------------|----------------|
| Hex:     | 200b-41h    | Effective  | -              |
|          |             | mode:      |                |
| Min.:    | -2147483648 | Unit:      | Reference unit |
| Max.:    | 2147483647  | Data Type: | Int32          |
| Default: | 0           | Change:    | Unchangeable   |

**Value Range:**  
-2147483648 to 2147483647

**Description**  
Displays the value of the pulse reference counter before being divided or multiplied by the electronic gear ratio. This value is independent of the servo drive status and the control mode.

**H0b.66      Encoder temperature**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-43h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | -32768   | Unit:      | °C           |
| Max.:    | 32767    | Data Type: | Int16        |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**  
-32768°C–32767°C

**Description**  
-

**H0b.67      Load rate of regenerative resistor**

|       |          |           |   |
|-------|----------|-----------|---|
| Hex:  | 200b-44h | Effective | - |
|       |          | mode:     |   |
| Min.: | 0.0      | Unit:     | % |

|          |       |            |              |
|----------|-------|------------|--------------|
| Max.:    | 200.0 | Data Type: | UInt16       |
| Default: | 0.0   | Change:    | Unchangeable |

**Value Range:**

0.0% to 200.0%

**Description**

-

**H0b.70 Number of absolute encoder revolutions**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-47h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | -32768   | Unit:      | Rev          |
| Max.:    | 32767    | Data Type: | Int16        |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

-32768Rev to 32767Rev

**Description**

Indicates the number of revolutions of the absolute encoder.

**H0b.71 Single-turn position fed back by the absolute encoder**

|          |            |            |              |
|----------|------------|------------|--------------|
| Hex:     | 200b-48h   | Effective  | -            |
|          |            | mode:      |              |
| Min.:    | 0          | Unit:      | p            |
| Max.:    | 2147483647 | Data Type: | UInt32       |
| Default: | 0          | Change:    | Unchangeable |

**Value Range:**

0 p to 2147483647 p

**Description**

Displays the position feedback of the absolute encoder within one turn.

**H0b.74 System fault information given by FPGA**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-4Bh | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0b.77 Encoder position (low 32 bits)**

|          |            |            |              |
|----------|------------|------------|--------------|
| Hex:     | 200b-4Eh   | Effective  | -            |
|          |            | mode:      |              |
| Min.:    | 0          | Unit:      | p            |
| Max.:    | 4294967295 | Data Type: | UInt32       |
| Default: | 0          | Change:    | Unchangeable |

**Value Range:**

0p to 4294967295p

**Description**

Displays the low 32-bit value of the position feedback of the absolute encoder.

**H0b.79 Encoder position (high 32 bits)**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 200b-50h    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | -2147483648 | Unit:      | p            |
| Max.:    | 2147483647  | Data Type: | Int32        |
| Default: | 0           | Change:    | Unchangeable |

**Value Range:**

-2147483648p to 2147483647p

**Description**

Displays the high 32-bit value of the position feedback of the absolute encoder.

**H0b.81 Single-turn position of the rotary load (low 32 bits)**

|          |            |            |              |
|----------|------------|------------|--------------|
| Hex:     | 200b-52h   | Effective  | -            |
|          |            | mode:      |              |
| Min.:    | 0          | Unit:      | p            |
| Max.:    | 4294967295 | Data Type: | UInt32       |
| Default: | 0          | Change:    | Unchangeable |

**Value Range:**

0p to 4294967295p

**Description**

Displays the low 32-bit value of the position feedback of the rotary load when the absolute system works in the rotation mode.

**H0b.83 Single-turn position of the rotary load (high 32 bits)**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 200b-54h    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | -2147483648 | Unit:      | p            |
| Max.:    | 2147483647  | Data Type: | Int32        |
| Default: | 0           | Change:    | Unchangeable |

**Value Range:**

-2147483648p to 2147483647p

### Description

Displays the high 32-bit value of the position feedback of the rotary load when the absolute system works the rotation mode.

## H0b.85 Single-turn position of the rotary load (reference unit)

|          |            |                 |              |
|----------|------------|-----------------|--------------|
| Hex:     | 200b-56h   | Effective mode: | -            |
| Min.:    | 0          | Unit:           | p            |
| Max.:    | 4294967295 | Data Type:      | UInt32       |
| Default: | 0          | Change:         | Unchangeable |

### Value Range:

0p to 4294967295p

### Description

Displays the high 32-bit value of the position feedback of the rotary load when the absolute system works the rotation mode.

## H0b.87 IGBT junction temperature

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-58h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 200      | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

### Value Range:

0–200

### Description

-

## H0b.90 Group No. of the abnormal parameter

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-5Bh | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

### Value Range:

0–65535

### Description

-



**H0b.91 Offset within the group of the abnormal parameter**

|                     |          |            |              |
|---------------------|----------|------------|--------------|
| Hex:                | 200b-5Ch | Effective  | -            |
|                     |          | mode:      |              |
| Min.:               | 0        | Unit:      | -            |
| Max.:               | 65535    | Data Type: | UInt16       |
| Default:            | 0        | Change:    | Unchangeable |
| <b>Value Range:</b> |          |            |              |
| 0–65535             |          |            |              |
| <b>Description</b>  |          |            |              |
| -                   |          |            |              |

**H0b.92 Hall state**

|                     |          |            |              |
|---------------------|----------|------------|--------------|
| Hex:                | 200b-5Dh | Effective  | -            |
|                     |          | mode:      |              |
| Min.:               | 0        | Unit:      | -            |
| Max.:               | 65535    | Data Type: | UInt16       |
| Default:            | 0        | Change:    | Unchangeable |
| <b>Value Range:</b> |          |            |              |
| 0–65535             |          |            |              |
| <b>Description</b>  |          |            |              |
| -                   |          |            |              |

**H0b.94 Individual power-on time**

|                                                    |             |            |              |
|----------------------------------------------------|-------------|------------|--------------|
| Hex:                                               | 200b-5Fh    | Effective  | -            |
|                                                    |             | mode:      |              |
| Min.:                                              | 0.0         | Unit:      | s            |
| Max.:                                              | 429496729.5 | Data Type: | UInt32       |
| Default:                                           | 0.0         | Change:    | Unchangeable |
| <b>Value Range:</b>                                |             |            |              |
| 0.0s–429496729.5s                                  |             |            |              |
| <b>Description</b>                                 |             |            |              |
| Display the individual power-on time of the drive. |             |            |              |

**H0b.96 Individual power-on time upon occurrence of the selected fault**

|                     |             |            |              |
|---------------------|-------------|------------|--------------|
| Hex:                | 200b-61h    | Effective  | -            |
|                     |             | mode:      |              |
| Min.:               | 0.0         | Unit:      | s            |
| Max.:               | 429496729.5 | Data Type: | UInt32       |
| Default:            | 0.0         | Change:    | Unchangeable |
| <b>Value Range:</b> |             |            |              |
| 0.0s–429496729.5s   |             |            |              |

**Description**

-

**2.13 H0C Fault and Protection Parameters 2****H0C.53 Probe DI ON compensation time 2**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200C-36h | Effective mode: | Real time |
| Min.:    | -3000    | Unit:           | 25ns      |
| Max.:    | 3000     | Data Type:      | Int16     |
| Default: | 200      | Change:         | Real-time |

**Value Range:**

-3000–3000

**Description**

Used to compensate for the action time when touch probe 2 is switched on.  
(Effective when H0A\_40 bit4 = 1)

**H0C.54 Probe DI OFF compensation time 2**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200C-37h | Effective mode: | Real time |
| Min.:    | -3000    | Unit:           | 25ns      |
| Max.:    | 3000     | Data Type:      | Int16     |
| Default: | 1512     | Change:         | Real-time |

**Value Range:**

-3000–3000

**Description**

Used to compensate for the action time when touch probe 2 is switched off.  
(Effective when H0A\_40 bit4 = 1)

**H0C.71 Internal function switch**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200C-48h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 65535    | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | Real-time              |

**Value Range:**

0–65535

**Description**

bit9: FPGA encoder feedback overspeed point hide switch

## 2.14 H0d Auxiliary Parameters

|                                                                                                                                                                                                                                                      |                                   |                 |           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------|-----------|
| <b>H0d.00</b>                                                                                                                                                                                                                                        | <b>Software Reset</b>             |                 |           |
| Hex:                                                                                                                                                                                                                                                 | 200d-01h                          | Effective mode: | Real time |
| Min.:                                                                                                                                                                                                                                                | 0                                 | Unit:           | -         |
| Max.:                                                                                                                                                                                                                                                | 1                                 | Data Type:      | UInt16    |
| Default:                                                                                                                                                                                                                                             | 0                                 | Change:         | At stop   |
| <b>Value Range:</b>                                                                                                                                                                                                                                  |                                   |                 |           |
| 0: No operation                                                                                                                                                                                                                                      |                                   |                 |           |
| 1: Enable                                                                                                                                                                                                                                            |                                   |                 |           |
| <b>Description</b>                                                                                                                                                                                                                                   |                                   |                 |           |
| Programs in the drive are reset automatically (similar to the program reset upon power-on) after the software reset function is enabled, without the need for a power cycle.                                                                         |                                   |                 |           |
| <b>H0d.01</b>                                                                                                                                                                                                                                        | <b>Fault Reset</b>                |                 |           |
| Hex:                                                                                                                                                                                                                                                 | 200d-02h                          | Effective mode: | Real time |
| Min.:                                                                                                                                                                                                                                                | 0                                 | Unit:           | -         |
| Max.:                                                                                                                                                                                                                                                | 1                                 | Data Type:      | UInt16    |
| Default:                                                                                                                                                                                                                                             | 0                                 | Change:         | At stop   |
| <b>Value Range:</b>                                                                                                                                                                                                                                  |                                   |                 |           |
| 0: No operation                                                                                                                                                                                                                                      |                                   |                 |           |
| 1: Enable                                                                                                                                                                                                                                            |                                   |                 |           |
| <b>Description</b>                                                                                                                                                                                                                                   |                                   |                 |           |
| When a No. 1 or No. 2 resettable fault occurs, you can enable the fault reset function in the non-operational state after rectifying the fault cause, stopping the keypad from displaying the fault and allowing the drive to enter the "rdy" state. |                                   |                 |           |
| When a No. 3 warning occurs, you can enable the fault reset function directly, regardless of the servo drive status.                                                                                                                                 |                                   |                 |           |
| <b>H0d.02</b>                                                                                                                                                                                                                                        | <b>Inertia auto-tuning enable</b> |                 |           |
| Hex:                                                                                                                                                                                                                                                 | 200d-03h                          | Effective mode: | Real time |
| Min.:                                                                                                                                                                                                                                                | 0                                 | Unit:           | -         |
| Max.:                                                                                                                                                                                                                                                | 65                                | Data Type:      | UInt16    |
| Default:                                                                                                                                                                                                                                             | 0                                 | Change:         | Real-time |
| <b>Value Range:</b>                                                                                                                                                                                                                                  |                                   |                 |           |
| 0–65                                                                                                                                                                                                                                                 |                                   |                 |           |

**Description**

Used to enable offline inertia auto-tuning through the keypad. In the parameter display mode, switch to H0d.02 and press the SET key to enable offline inertia auto-tuning.

**H0d.04 Read/write in encoder ROM**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-05h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 3        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: No operation

1: Write ROM

2: Read ROM

3: ROM failure

**Description**

For Inovance encoders, the USB and control circuit need to be disconnected after writing in ROM to activate parameters. Also ensure that the drive is powered on during parameter writing.

**H0d.05 Emergency stop**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-06h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: No operation

1: Emergency stop

**Description**

-

**H0d.06 Current loop auto-tuning test**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-07h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 7        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

- 0: No operation
- 1: Enable current loop auto-tuning
- 2: Enable current loop step test (static)
- 3: Enable current loop step test

**Description**

- 0: No operation
- 1: Enable current loop auto-tuning
- 2: Enable current loop step test (static)
- 3: Enable current loop step test

**H0d.10 Analog channel auto adjusting**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-0Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

- 0: No operation
- 1: Adjusted through AI1
- 2: Adjusted through AI2

**Description**

When automatic adjustment of the analog channel is enabled, the drive automatically corrects the zero drift voltage of the analog channel to improve signal detection accuracy.

**H0d.12 Phase U/V current balance correction**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-0Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

- 0: Disabled
- 1: Enabled

**Description**

-

**H0d.17 Forced DI/DO enable switch**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 200d-12h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |

|          |   |            |           |
|----------|---|------------|-----------|
| Max.:    | 3 | Data Type: | UInt16    |
| Default: | 0 | Change:    | Real-time |

**Value Range:**

bit0: Forced DI enable switch

0: Disabled

1: Enabled

bit1: Forced DO enable switch

0: Disabled

1: Enabled

**Description**

Forced DI/DO selection.

**H0d.18****Forced DI value**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-13h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 255      | Data Type:      | UInt16    |
| Default: | 255      | Change:         | Real-time |

**Value Range:**

0–255

**Description**

Defines whether the DI functions set in group H03 is active when forced DI is activated (H0d.17 = 1 or 3).

The value of H0d.18 is displayed as a hexadecimal on the keypad. When it is converted to a binary value, "bit(n) = 1" indicates the level logic of DI function is high level; "bit(n) = 0" indicates the level logic of the DI function is low level.

**H0d.19****Forced DO value**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-14h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 31       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–31

**Description**

Defines whether the DO functions assigned in group H04 are active when forced DO is active (H0d.17 = 2 or 3).

The value of H0d.19 is displayed as a hexadecimal on the keypad. When it is converted to a binary value, "bit(n) = 1" indicates the DO function is active; "bit(n) = 0" indicates the DO function is inactive.

**H0d.20 Absolute encoder reset**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-15h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 4        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: No operation

1: Reset fault

2: Reset fault and multi-turn data

3: Reset Inovance 2nd encoder fault

4: Reset Inovance 2nd encoder fault and multi-turn data

**Description**

You can reset the encoder error or the multi-turn data fed back by the encoder by setting H0d.20.

**H0d.21 Read error status bit of Nikon and EnDat2.2 encoders**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-16h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: No operation

1: Reading error status bit

**Description**

Used to read the error status bit of Nikon encoder and ENDAT encoder.

**H0d.29 Motor parameter auto-tuning**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-1Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: No operation

1: Enabled

**Description**

Resistor inductance auto-tuning.

## 2.15 H0E Communication Function Parameters

### H0E.00 Node address

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200E-01h | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 127      | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

#### Value Range:

1–127

#### Description

CAN Indicates the slave node address. Ensure this parameter is consistent with the configuration of the host controller.

### H0E.01 Save objects written through communication to e2prom

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200E-02h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 4        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

#### Value Range:

0: Not save

1: Save parameters written through communication to e2prom

2: Save object dictionaries written through communication to e2prom

3: Save parameters and object dictionaries written through communication to e2prom

4: Save object dictionaries written before communication (OP) to e2prom

#### Description

-

### H0E.07 Object dictionary unit selection

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200E-08h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

#### Value Range:

0: Reference unit system (p/s, p/s<sup>2</sup>)

1: User unit system (0.01 [mm/s]/[rpm], ms)

#### Description



Servo unit system switching:

0: Use reference unit system. The speed type dictionary unit is p/s, and the acceleration type object dictionary is p/s<sup>2</sup>.

1: User unit system, 0.01 [mm/s]/[rpm] for speed type object dictionaries and ms (time taken for changing from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm]) for acceleration type object dictionaries.

#### H0E.10

##### **CAN selection**

Hex: 200E-0Bh

Effective mode: Upon the next power-on

Min.: 0

Unit: -

Max.: 2

Data Type: UInt16

Default: 0

Change: At stop

##### **Value Range:**

0: Pulse/Axis control command

1: Enhanced axis control command

2: CANopen

##### **Description**

-

#### H0E.11

##### **CAN baud rate**

Hex: 200E-0Ch

Effective mode: Real time

Min.: 0

Unit: -

Max.: 7

Data Type: UInt16

Default: 5

Change: At stop

##### **Value Range:**

0: 20 kbps

1: 50 kbps

2: 100 kbps

3: 125 kbps

4: 250 kbps

5: 500 kbps

6: 1 Mbps

1 Mbps - non-standard

##### **Description**

It sets the CAN (CANlink or CANopen) communication rate between the servo drive and the host controller. The communication rate set in the servo drive must be the same as that in the host controller. Otherwise, communication will fail. If H0E.11 is set to 6, the baud rate is 1 Mbps. 80% sampling points are used to match most PLCs with a 1M standard baud rate. If H0E.11 is set to 7, the baud rate is 1 Mbps. 70% sampling points are used to match most PLCs with a 1M non-standard (deviated) baud rate. Reducing sampling points can also reduce error frames.

#### **H0E.12 Excessive IP position command increment count**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200E-0Dh | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 30       | Data Type:      | UInt16    |
| Default: | 20       | Change:         | Real-time |

##### **Value Range:**

1–30

##### **Description**

-

#### **H0E.13 CANopen sync period error limit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200E-0Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 5        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

##### **Value Range:**

0: 1/4

1: 1/2

2: 3/4

3: 1

4: 2

5: Disabled

##### **Description**

-

#### **H0E.14 CANopen communication state**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200E-0Fh | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 9        | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–9

**Description**

-

**H0E.17      Get the count of received NMT frames with incorrect length**

Hex:            200E-12h

Effective      -

mode:

Min.:           0

Unit:           -

Max.:           65535

Data Type:   UInt16

Default:       0

Change:       Unchangeable

**Value Range:**

0–65535

**Description**

-

**H0E.18      Get the count of received NMT frames with incorrect command**

Hex:            200E-13h

Effective      -

mode:

Min.:           0

Unit:           -

Max.:           65535

Data Type:   UInt16

Default:       0

Change:       Unchangeable

**Value Range:**

0–65535

**Description**

-

**H0E.19      Get received heartbeat frames of wrong length**

Hex:            200E-14h

Effective      -

mode:

Min.:           0

Unit:           -

Max.:           65535

Data Type:   UInt16

Default:       0

Change:       Unchangeable

**Value Range:**

0–65535

**Description**

-

**H0E.80      Modbus baud rate**

Hex:            200E-51h

Effective      Real time

mode:

Min.:           0

Unit:           -

Max.: 9  
Default: 9

Data Type: UInt16  
Change: Real-time

**Value Range:**

0: 300 bps  
1: 600 bps  
2: 1200 bps  
3: 2400 bps  
4: 4800 bps  
5: 9600 bps  
6: 19200 bps  
7: 38400 bps  
8: 57600 bps  
9: 115200 bps

**Description**

Defines the communication rate between the servo drive and the host controller. The baud rate set in the servo drive must be the same as that in the host controller. Otherwise, communication will fail.

**H0E.81 Modbus data format**

Hex: 200E-52h

Effective mode: Real time

Min.: 0  
Max.: 3  
Default: 3

Unit: -  
Data Type: UInt16  
Change: Real-time

**Value Range:**

0: No parity, 2 stop bits (N-2)  
1: Even parity, 1 stop bit (E-1)  
2: Odd parity, 1 stop bit (O-1)  
3: No parity, 1 stop bit (N-1)

**Description**

Defines the data check mode between the servo drive and the host controller during communication.

0: No parity, 2 stop bits  
1: Even parity, 1 stop bit  
2: Odd parity, 1 stop bit  
3: No parity, 1 stop bit

The data format of the servo drive must be the same as that of the host controller. Otherwise, communication will fail.

**H0E.82 Modbus response delay**

Hex: 200E-53h

Effective mode: Real time

|          |    |            |           |
|----------|----|------------|-----------|
| Min.:    | 0  | Unit:      | ms        |
| Max.:    | 20 | Data Type: | UInt16    |
| Default: | 0  | Change:    | Real-time |

**Value Range:**

0 ms to 20 ms

**Description**

Defines the delay from the moment when the slave receives a command from the host controller to the moment when the slave returns a response.

**H0E.83 Modbus communication timeout**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200E-54h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 600      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 ms to 600 ms

**Description**

-

**H0E.84 Sequence of Modbus communication data bits**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200E-55h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

0: High bits before low bits

1: Low bits before high bits

**Description**

Defines the 32-bit data transmission format of Modbus communication.

0: High 16 bits before low 16 bits

1: Low 16 bits before high 16 bits

**H0E.90 Communication version**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200E-5Bh | Effective mode: | -            |
| Min.:    | 0.00     | Unit:           | -            |
| Max.:    | 655.35   | Data Type:      | UInt16       |
| Default: | 0.00     | Change:         | Unchangeable |

**Value Range:**

0.00–655.35

**Description**

-

**H0E.97 Communication monitoring parameter 1**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200E-62h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

-

**H0E.98 Communication monitoring parameter 2**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200E-63h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

-

**2.16 H0F Fully Closed-Loop****H0F.00 Encoder feedback mode**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-01h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 2        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | Real-time              |

**Value Range:**

0: Internal encoder feedback

1: External encoder feedback

2: Inner/Outer loop switchover

**Description**

Defines the encoder feedback signal source in fully closed-loop control.

0: Internal encoder feedback. The position feedback signals come from the motor encoder.

1: External encoder feedback The position feedback signals come from the fully closed-loop external encoder and electronic gear ratio 1 is used.

2: Inner/Outer loop switchover: The DI assigned with FunIN.24 (GEAR\_SEL, electronic gear ratio switchover) is switch between inner and outer position closed loops.

DI function: disabled, internal encoder feedback, with electronic gear ratio 1 used

Enabled, external encoder feedback, with electronic gear ratio 2 used

### Note

To switch between inner and outer loops, you need to set H0F.00 to 2, rather than changing it to 0 or 1 in realtime.

#### H0F.01 Fully closed-loop encoder application mode

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-02h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | Real-time              |

#### Value Range:

0: Standard operating direction

1: Reverse operating direction

#### Description

Defines the feedback pulse counting direction of internal and external encoders when the motor rotates in the fully closed-loop mode.

0: Standard operating direction: The pulse feedback counter of the internal encoder (H0F.18) is in the same direction as that of the external encoder (H0F.20) during rotation of the motor.

1: Reverse operating direction: The pulse feedback counter of the internal encoder (H0F.18) is in the opposite direction as that of the external encoder (H0F.20) during rotation of the motor.

#### H0F.02 Fully closed-loop encoder absolute value

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-03h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Incremental mode

1: Absolute linear mode

**Description**

-

**H0F.03****Fully closed-loop encoder feedback type**

Hex: 200F-04h

Effective mode: Upon the next power-on

Min.: 0

Unit: -

Max.: 4

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0: Quadrature pulse

1: Inovance

2: BiSS-C

3: ENDAT2.2

4: SSI

**Description**

-

**H0F.04****Number of fully closed-loop encoder pulses per revolution**

Hex: 200F-05h

Effective mode: Upon the next power-on

Min.: 1

Unit: -

Max.: 2147483647

Data Type: UInt32

Default: 10000

Change: At stop

**Value Range:**

1–2147483647

**Description**

Defines the pulses fed back by the external encoder per revolution of the motor. It defines the quantity relation between feedback pulses from the external encoder and those from the internal encoder.

Calculate the value of this parameter through analyzing mechanical parameters. When rigid connection is applied between the motor and the external encoder (scale), you can also set this parameter using the following method:



1. Manually rotate the motor and observe H0F.18 (Feedback pulse counter of internal encoder) in the meantime. After ensuring that the motor has rotated for a full turn ( $H0F.18 = \text{Motor resolution}$ ), calculate the change of H0F.20 (Feedback pulse counter of external encoder) and use the absolute value of the change as the value of H0F.04.

2. Assume values of H0F.18 and H0F.20 are X1 and Y1 before the motor rotates and X2 and Y2 after the motor rotates, then the following formula applies:  
 $H0F.04 = \text{Motor resolution} \times (Y2 - Y1) / (X2 - X1)$  The calculated result must be positive; if not, perform step 1 again.

For non-rigid connection, an error may exist in the calculation result.

Note:

Ensure H0F.04 is set properly. Otherwise, EB02.0 (Position deviation too large in fully closed loop) may occur after the drive operates.

### **H0F.06 Fully closed-loop encoder interface**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-07h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | Int16                  |
| Default: | 1        | Change:         | At stop                |

#### **Value Range:**

0: CN2

1: CN7

#### **Description**

Used to set the drive interface used by the fully closed-loop encoder.

### **H0F.08 Excessive deviation threshold in compound control mode**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 200F-09h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 1000       | Change:         | Real-time |

#### **Value Range:**

0–2147483647

#### **Description**

Defines the position deviation threshold at which the servo drive reports EB02.0 (Position deviation too large in fully closed-loop mode).

When H0F.08 is set to 0, the drive does not detect EB02.0 and always clears the fully closed-loop position deviation.

**H0F.10 Clear deviation in compound control mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200F-0Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | Rev       |
| Max.:    | 100      | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

0 Rev to 100 Rev

**Description**

Defines the number of revolutions rotated by the motor per a clear of the fully closed-loop position deviation during operation. The number of revolutions is reflected by H0F.18 (Feedback pulse counter of internal encoder). The number of motor revolutions will not be cleared when the drive is not in the operational state.

**H0F.13 Compound vibration suppression filter time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200F-0Eh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | ms        |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | At stop   |

**Value Range:**

0.0 ms to 6553.5 ms

**Description**

Defines the time constant for compound vibration suppression in fully closed-loop control when external encoder feedback (H0F.00 = 1 or 2) is used.

Increase the setpoint gradually and check the response change.

When the stiffness of the transmission mechanism between fully closed loop and internal loop is insufficient, set H0F.13 properly to improve system stability, which is to generate the effect of internal loop temporarily and form a fully closed loop again after the system is stabilized. When the stiffness is sufficient, there is no need to adjust this parameter.

**H0F.16 Pulse deviation display in compound control mode**

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 200F-11h    | Effective mode: | -            |
| Min.:    | -2147483648 | Unit:           | Encoder unit |
| Max.:    | 2147483647  | Data Type:      | Int32        |
| Default: | 0           | Change:         | Unchangeable |

**Value Range:**

-2147483648 to 2147483647

**Description**

Used to count and display the position deviation absolute value in fully closed loop control.

Pulse deviation in compound control = Absolute position feedback of external encoder - Absolute position feedback conversion value of internal encoder.

The alignment of inner and outer loop feedbacks is performed each time the deviation is cleared.

#### **H0F.18 Internal position pulse feedback display**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 200F-13h    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | -2147483648 | Unit:      | Encoder unit |
| Max.:    | 2147483647  | Data Type: | Int32        |
| Default: | 0           | Change:    | Unchangeable |

##### **Value Range:**

-2147483648 to 2147483647

##### **Description**

Used to count and display the number of feedback pulses of the internal encoder (after being divided or multiplied by electronic gear ratio, in internal encoder unit).

#### **H0F.20 Fully closed-loop encoder position pulse feedback display**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 200F-15h    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | -2147483648 | Unit:      | Encoder unit |
| Max.:    | 2147483647  | Data Type: | Int32        |
| Default: | 0           | Change:    | Unchangeable |

##### **Value Range:**

-2147483648 to 2147483647

##### **Description**

Used to count and display the number of feedback pulses of the external encoder (after being divided or multiplied by electronic gear ratio, in external encoder unit).

#### **H0F.22 Quadrature pulse phase Z detection invalid in fully closed-loop mode**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 200F-17h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 1        | Data Type: | UInt16    |
| Default: | 0        | Change:    | Real-time |

##### **Value Range:**

0: Detected

1: Not detected

**Description**

-

**H0F.23 BISSC/SSI/EDNAT2.2 full closed-loop encoder absolute homing offset**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 200F-18h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

The homing offset is automatically updated after homing is completed, and is automatically aligned with H05.36. It is only necessary to write this value manually when you replace the drive. When the full closed-loop encoder is in absolute linear mode, the power-on initial position = Encoder position feedback original value + Homing offset – Absolute feedback offset

**H0F.25 Set the source of touch probe Z signal in fully closed-loop mode.**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200F-1Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Motor Z signal

1: External feedback Z signal

**Description**

-

**H0F.26 BISSC/SSI/EDNAT2.2 full closed-loop encoder absolute feedback offset**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 200F-1Bh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

When the full closed-loop encoder is in absolute linear mode, the absolute feedback offset is updated after homing is completed. It is only necessary to write this value manually when you replace the drive.

**H0F.28 Index value of BiSS/SSI communication alarm**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200F-1Dh | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0F.29 CRC of BiSS-C/SSI fully closed-loop encoder feedback**

|          |          |            |                        |
|----------|----------|------------|------------------------|
| Hex:     | 200F-1Eh | Effective  | Upon the next power-on |
|          |          | mode:      |                        |
| Min.:    | 0        | Unit:      | -                      |
| Max.:    | 1        | Data Type: | UInt16                 |
| Default: | 1        | Change:    | Real-time              |

**Value Range:**

0: Positive

1: Negative

**Description**

-

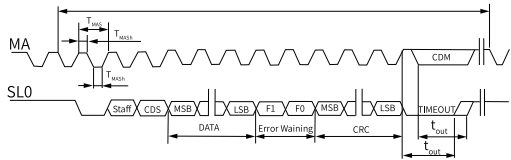
**H0F.30 BiSS-C/SSI/EDNAT2.2 valid bits of encoder communication position feedback in full closed-loop mode**

|          |          |            |                        |
|----------|----------|------------|------------------------|
| Hex:     | 200F-1Fh | Effective  | Upon the next power-on |
|          |          | mode:      |                        |
| Min.:    | 0        | Unit:      | -                      |
| Max.:    | 127      | Data Type: | UInt16                 |
| Default: | 29       | Change:    | At stop                |

**Value Range:**

0–127

### Description



- DATA: position data    CRC: 6-bit CRC code
- $100\text{ns} \leq T_{\text{MAS}} \leq 2t_{\text{out}}$      $25\text{ns} \leq T_{\text{MASH}} \leq t_{\text{out}}$      $25\text{ns} \leq T_{\text{MASH}} \leq t_{\text{out}}$
- $t_{\text{out}} = 1.5\text{MA clock period}$
- MA : master clock output; SL0: slave data output transmission speed up to 10 Mbps.
- CDM: register communication master transmit bit; CDS: register communication slave return bit
- Error Warning: error and warning bits index (F1 low level indicates an error, F0 low level indicates an alarm)
- Scale input and output complies with RS-422A The differential line drive and line receiver are required.
- CRC generator polynomial:  $X^6 + X^1 + 1$ , initial value 0, range "DATA", "Error Warning". In the figure, MA SL0 are not shown.

H0F.30 is the valid bits of position feedback. For details, see the user manual of any third-party BiSS-C encoder.

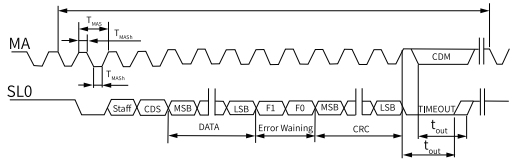
### H0F.31    Valid bit of BiSS-C/SSL encoder communication alarm index in full closed-loop mode

|          |          |            |                              |
|----------|----------|------------|------------------------------|
| Hex:     | 200F-20h | Effective  | Upon the next power-on mode: |
| Min.:    | 0        | Unit:      | -                            |
| Max.:    | 31       | Data Type: | UInt16                       |
| Default: | 2        | Change:    | At stop                      |

#### Value Range:

0–31

### Description



- DATA: position data    CRC: 6-bit CRC code
- $100\text{ns} \leq T_{\text{MAS}} \leq 2t_{\text{out}}$      $25\text{ns} \leq T_{\text{MASH}} \leq t_{\text{out}}$      $25\text{ns} \leq T_{\text{MASH}} \leq t_{\text{out}}$
- $t_{\text{out}} = 1.5\text{MA clock period}$
- MA : master clock output; SL0: slave data output transmission speed up to 10 Mbps.
- CDM: register communication master transmit bit; CDS: register communication slave return bit
- Error Warning: error and warning bits index (F1 low level indicates an error, F0 low level indicates an alarm)
- Scale input and output complies with RS-422A The differential line drive and line receiver are required.
- CRC generator polynomial:  $X^6 + X^1 + 1$ , initial value 0, range "DATA", "Error Warning". In the figure, MA SL0 are not shown.

H0F.31: Error Warning set bit, error and alarm bit index. Its value is the difference between DATA and CRC.

**H0F.32 BiSS-C/SSI/ENDAT encoder communication frequency in fully closed-loop mode**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-21h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | kHz                    |
| Max.:    | 10000    | Data Type:      | UInt16                 |
| Default: | 2000     | Change:         | Real-time              |

**Value Range:**

0 kHz–10000 kHz

**Description**

-

**H0F.33 SSI/ENDAT encoder recovery time in fully closed-loop mode**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-22h | Effective mode: | Upon the next power-on |
| Min.:    | 0.000    | Unit:           | us                     |
| Max.:    | 40.000   | Data Type:      | UInt16                 |
| Default: | 0.500    | Change:         | Real-time              |

**Value Range:**

0.000us to 40.000us

**Description**

-

**H0F.35 BiSS-C error detection enable in fully closed-loop mode**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-24h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Detection on error bits of BiSS-C protocol by FPGA software.

**H0F.36 BiSS-C error bit polarity in fully closed-loop mode**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-25h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Positive

1: Negative

**Description**

Error bit polarity of BISS-C protocol.

**H0F.40 Communication error register in full closed-loop mode**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200F-29h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

-

Table 2-5 Inovance encoder

| bit               | Name                                                                              |
|-------------------|-----------------------------------------------------------------------------------|
| 0                 | Full closed-loop serial encoder communication timeout (RX side <sup>[1]</sup> )   |
| 1                 | Full closed-loop serial encoder frame stop bit error (RX side)                    |
| 2                 | Full closed-loop serial encoder CRC error (RX side) <sup>[2]</sup>                |
| 3                 | Full closed-loop serial encoder data field error (RX side)                        |
| 4                 | Full closed-loop serial encoder position count error (TX side <sup>[1]</sup> )    |
| 5                 | Full closed-loop serial encoder frame overspeed (TX side)                         |
| 6                 | Full closed-loop serial encoder over-temperature (TX side)                        |
| 7                 | Full closed-loop serial encoder single-turn count error (TX side)                 |
| 8                 | Full closed-loop serial encoder multi-turn count error (TX side)                  |
| 9                 | Full closed-loop serial encoder battery alarm (TX side)                           |
| 10                | Full closed-loop serial encoder battery failure (TX side)                         |
| 11–12             | Undefined                                                                         |
| 13 <sup>[3]</sup> | Full closed-loop serial encoder count increment error (algorithm <sup>[1]</sup> ) |
| 14–15             | Undefined                                                                         |
| 16–23             | Full closed-loop serial encoder expansion data 1                                  |
| 24–31             | Full closed-loop serial encoder expansion data 2                                  |



Table 2-6 EnDat encoder

| bit               | Name                                                              |
|-------------------|-------------------------------------------------------------------|
| 0                 | EnDat encoder communication timeout (RX side)                     |
| 1                 | EnDat level 1 fault (RX side)                                     |
| 2                 | EnDat encoder CRC error (RX side) <sup>[2]</sup>                  |
| 3                 | EnDat level 2 fault (RX side)                                     |
| 4                 | EnDat fault information 1 (TX side)                               |
| 5                 | EnDat fault information 2 (TX side)                               |
| 6-8               | Undefined                                                         |
| 9                 | EnDat additional data 1 CRC error                                 |
| 10                | EnDat additional data 2 CRC error                                 |
| 11-12             | Undefined                                                         |
| 13 <sup>[3]</sup> | Full closed-loop serial encoder count increment error (algorithm) |
| 14                | EnDat level 3 fault (RX side)                                     |
| 15                | EnDat level 3 fault (RX side)                                     |
| 16-23             | Full closed-loop serial encoder expansion data 1                  |
| 24-31             | Full closed-loop serial encoder expansion data 2                  |

Table 2-7 BiSS-C and SSI encoders

| bit                     | Name                                                               |
|-------------------------|--------------------------------------------------------------------|
| 0                       | Full closed-loop serial encoder communication timeout (RX side)    |
| 1                       | Undefined                                                          |
| 2                       | Full closed-loop serial encoder CRC error (RX side) <sup>[2]</sup> |
| 3-10                    | Undefined                                                          |
| 7                       | Full closed-loop serial encoder single-turn count error (TX side)  |
| 11-12                   | Undefined                                                          |
| 13 <sup>[3]</sup>       | Full closed-loop serial encoder count increment error (algorithm)  |
| 14-15                   | Undefined                                                          |
| 16 to 23 <sup>[4]</sup> | Full closed-loop serial encoder expansion data 1                   |
| 24 to 31 <sup>[4]</sup> | Full closed-loop serial encoder expansion data 2                   |

## Note

[1]: In the above table, the RX side refers to the drive and the TX side refers to the motor encoder. The algorithm refers to the type of the indirect error caused by a direct error on the RX or TX side.

[2]: When a BiSS-C encoder is used: 1-CRC error; 0-CRC is normal. When an SSI encoder is used: 1-Parity error; 0-Parity is normal.

[3]: When H0A.50 or more data transmission errors occur continuously, bit13 will be set to 1 and the drive must be stopped. For other error types, you can stop the drive as needed.

[4]: Full closed-loop serial encoder extended data 1/2 (when a BiSS-C encoder is used): This part is the status word of BiSS-C and SSI encoders.

### H0F.41 Inovance fully closed-loop encoder version

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200F-2Ah | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0.0      | Unit:      | -            |
| Max.:    | 6553.5   | Data Type: | UInt16       |
| Default: | 0.0      | Change:    | Unchangeable |

#### Value Range:

0.0–6553.5

#### Description

-

### H0F.42 Inovance fully closed-loop encoder resolution

|          |            |            |              |
|----------|------------|------------|--------------|
| Hex:     | 200F-2Bh   | Effective  | -            |
|          |            | mode:      |              |
| Min.:    | 0          | Unit:      | -            |
| Max.:    | 4294967295 | Data Type: | UInt32       |
| Default: | 0          | Change:    | Unchangeable |

#### Value Range:

0–4294967295

#### Description

-

### H0F.45 Positioning completed/Position deviation threshold in fully closed-loop mode

|       |          |            |           |
|-------|----------|------------|-----------|
| Hex:  | 200F-2Eh | Effective  | Real time |
|       |          | mode:      |           |
| Min.: | 0        | Unit:      | -         |
| Max.: | 1        | Data Type: | UInt16    |

Default: 0

Change: At stop

**Value Range:**

0: Threshold scaled to outer loop unit

1: Same threshold used for inner and outer loops

**Description**

0: Fully closed-loop positioning completed threshold 6067/Excessive position deviation threshold 6065 (scaled to outer loop unit)

1: Same threshold used for inner and outer loops

**H0F.46 Fully closed-loop speed feedback selection**

Hex: 200F-2Fh

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0: Internal encoder feedback

1: External encoder feedback

**Description**

-

**H0F.51 SSI encoder check bit selection in fully closed-loop mode**

Hex: 200F-34h

Effective Upon the next power-on

mode:

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 1

Change: At stop

**Value Range:**

0: No check

1: Check applied

**Description**

-

**H0F.52 SSI encoder code system in full closed-loop mode**

Hex: 200F-35h

Effective Upon the next power-on

mode:

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 1

Change: At stop

**Value Range:**

0: Binary

1: Gray code

**Description**

-

**H0F.53 SSI state word code system in fully closed-loop mode**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-36h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 1        | Change:         | At stop                |

**Value Range:**

0: Binary

1: Gray code

**Description**

-

**H0F.54 SSI encoder parity check in fully closed-loop mode**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-37h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Disabled

1: Enabled

**Description**

-

**H0F.55 Fully closed-loop encoder communication timeout error count**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200F-38h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Fully closed-loop encoder communication timeout error count

**H0F.56 Encoder CRC error count in fully closed-loop mode**

|      |          |                 |   |
|------|----------|-----------------|---|
| Hex: | 200F-39h | Effective mode: | - |
|------|----------|-----------------|---|

|          |       |            |              |
|----------|-------|------------|--------------|
| Min.:    | 0     | Unit:      | -            |
| Max.:    | 65535 | Data Type: | UInt16       |
| Default: | 0     | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

Encoder CRC error count in fully closed-loop mode

**H0F.57 Fully closed-loop encoder communication frame stop bit error count**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200F-3Ah | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Fully closed-loop encoder communication frame stop bit error count.

## 2.17 H11 Multi-position

**H11.00 Multi-position running mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-01h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 5        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

0: Single run (number of displacements selected in H11.01)

1: Cyclic operation (number of displacement selected in H11.01)

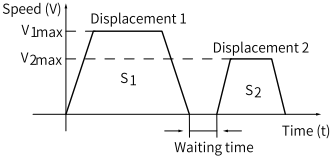
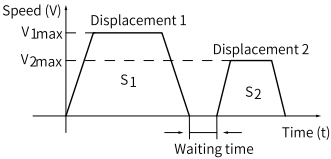
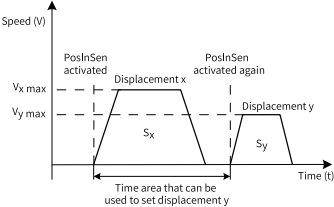
2: DI-based operation (selected by DI)

3: Sequential operation

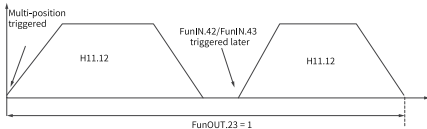
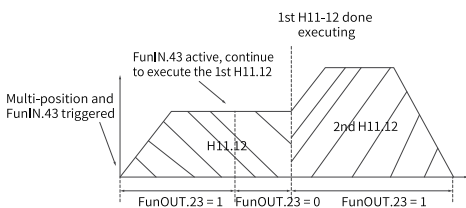
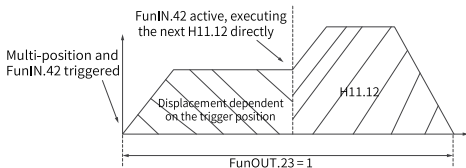
5: Axis-controlled continuous operation

**Description**

Defines the multi-position operation mode when the main position reference source is multi-position references (H05.00 = 2) in the position control mode.

| Value | Operation Mode       | Remarks                                                                                                                                                                                                                                                                                         | Operation Curve                                                                                                                                                                                                                                                                     |
|-------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0     | Individual operation | <p>The drive stops after one cycle of operation.</p> <p>The drive automatically switches to the next speed.</p> <p>You can set the interval time between displacements.</p> <p>The multi-position reference is level-triggered.</p>                                                             |  <p><math>V_{1max}</math>, <math>V_{2max}</math> : maximum operating speeds in displacement 1 and displacement 2</p> <p><math>S_1</math>, <math>S_2</math> : displacement 1 and displacement 2</p> |
| 1     | Cyclic operation     | <p>The starting displacement after the first cycle is displacement 1.</p> <p>The drive automatically switches to the next speed.</p> <p>You can set the interval time between displacements.</p> <p>The multi-position reference is level-triggered.</p>                                        |  <p><math>V_{1max}</math>, <math>V_{2max}</math> : maximum operating speeds in displacement 1 and displacement 2</p> <p><math>S_1</math>, <math>S_2</math> : displacement 1 and displacement 2</p> |
| 2     | DI-based operation   | <p>The drive continues operating when the displacement No. is updated.</p> <p>The speed No. is determined by the DI logic.</p> <p>The interval time between displacements is determined by the command delay of the host controller.</p> <p>The multi-position reference is edge-triggered.</p> |  <p><math>V_{xmax}</math>, <math>V_{ymax}</math> : maximum operating speeds in displacement x and displacement y</p> <p><math>S_x</math>, <math>S_y</math> : displacement x and displacement y</p> |

| Value | Operation Mode       | Remarks                                                                                                                                                                                                                                                                                                                                                                                                                     | Operation Curve                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3     | Sequential operation | <p>The drive stops after one cycle of operation.<br/>(H11.05 = 0 or H11.05 &gt; H11.01). When H11.05 is greater than H11.01, the software will set H11.05 to 0.</p> <p>The starting displacement after the first cycle is defined by H11.05.</p> <p>The drive automatically switches to the next speed.</p> <p>There is no interval time between displacements.</p> <p>The multi-position reference is level-triggered.</p> | <p>The graph illustrates the speed profile for sequential operation. The vertical axis represents Speed (V) and the horizontal axis represents Time (t). The profile shows two distinct operating periods: Displacement 1 at speed <math>V_{1max}</math> and Displacement 2 at speed <math>V_{2max}</math>. The time intervals for these displacements are labeled <math>S_1</math> and <math>S_2</math> respectively. The speed is zero during the transition between displacements.</p> <p><math>V_{1max}</math>, <math>V_{2max}</math> : maximum operating speeds in displacement 1 and displacement 2<br/><math>S_1</math>, <math>S_2</math> : displacement 1 and displacement 2</p> |

| Value | Operation Mode                       | Remarks                                                                                                                                                                                                                                         | Operation Curve                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5     | Axis-controlled continuous operation | <p>The drive executes one displacement only.</p> <p>The individual operation mode, sequential operation mode, and interrupted operation mode are included.</p> <p>The PosInSen (multi-position reference enable) signal is level-triggered.</p> | <p>● Individual operation</p>  <p>The PosInSen (multi-position reference enable) signal is triggered only once (FunIN.43/42 triggered later). The drive stops after executing the distance defined by H11.12.</p> <p>● Sequential operation</p>  <p>The PosInSen (multi-position reference enable) signal is triggered only once. Write H11.12 again and activate FunIN.43 when the distance defined by the first H11.12 is still in progress. After receiving the new distance (or speed), which is the second H11.12, the drive continues executing the first H11.12 until the distance defined by the first H11.12 is done. Then it starts to execute the second H11.12 directly. The travel distance therefore is the sum of the first H11.12 and the second H11.12.</p> <p>● Interrupted operation</p>  <p>The PosInSen (Multi-position reference enable) signal is triggered only once. Write H11.12 (such as 1000000) again and activate FunIN.42 when the first H11.12 (such as 9000000) is still in progress. After receiving the new distance (or speed), which is the second H11.12, the drive stops executing the first H11.12 and turns to executing the second H11.12.</p> |

To use the multi-position function, assign FunIN.28 (PosInSen, multi-position reference enable) to a DI first. See "Group H03: Terminal input parameters" for the setting mode.



The positioning completed (COIN) signal is activated each time upon completion of a displacement. To determine whether a certain displacement is done executing, use FunOUT.5 (COIN, positioning completed). See "Group H04: Terminal output parameters" for details.

Ensure the S-ON signal is active during operation of each displacement. Otherwise, the drive stops immediately as defined by H02.05 (Stop mode at S-ON OFF) and the positioning completed (COIN) signal is inactive. In modes other than DI-based operation, if the S-ON signal is active but multi-position is disabled during operation of a certain displacement, the drive abandons the unsent displacement reference and stops, with the positioning completed (COIN) signal being active. If the multi-position function is enabled again, the displacement to be executed is defined by H11.02.

### **H11.01      Number of displacement references in multi-position mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-02h | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 16       | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

#### **Value Range:**

1–16

#### **Description**

Defines the total number of displacement references in the multi-position mode. You can set different displacements, operating speeds, and acceleration/ deceleration time for each displacement.

H11.00  $\neq$  2: Displacements are switched automatically in a sequence from 1, 2... H11.01.

H11.00 is 2: Assign four DIs (Hardware DI or VDI) with DI functions 6 to 9 (FunIN.6: CMD1 to FunIN.9: CMD4) and control the DI logic through the host controller to switch between different speeds. The segment No. is a 4-bit binary value. Bits 0 to 3 correspond to CMD1 to CMD4.

The displacement No. is a 4-bit binary value. The relationship between the displacement numbers and CMD1...CMD4 is shown in the following table.

| FunIN.9<br>CMD4 | FunIN.8<br>CMD3 | FunIN.7<br>CMD2 | FunIN.6<br>CMD1 | Segment No. |
|-----------------|-----------------|-----------------|-----------------|-------------|
| 0               | 0               | 0               | 0               |             |
| 0               | 0               | 0               | 1               | 2           |
| ...             |                 |                 |                 |             |
| 1               | 1               | 1               | 1               | 16          |

### **H11.02      Starting displacement No. after pause**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2011-03h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |   |            |         |
|----------|---|------------|---------|
| Min.:    | 0 | Unit:      | -       |
| Max.:    | 1 | Data Type: | UInt16  |
| Default: | 0 | Change:    | At stop |

**Value Range:**

0: Continue to execute the unexecuted displacements

1: Start from displacement 1

**Description**

Defines the starting displacement No. when the multi-position operation recovers from a pause.

Pause:

1. The servo drive switches to another control mode or the interrupt positioning function is enabled during multi-position operation.

2. The internal multi-position enable signal (FunIN.28:PosInSen) changes from "active" to "inactive".

0: Continue to execute the unexecuted displacements: For example, if H11.01 is set to 16 and the drive pauses at displacement 2, after the drive recovers from the pause, it will start from displacement 3.

1: Start from displacement 1: For example, if H11.01 is set to 16 and the drive pauses at displacement 2, after the drive recovers from the pause, it will start from displacement 1.

**H11.03****Interval time unit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-04h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: ms

1: s

**Description**

Defines the unit of acceleration/deceleration time and the interval time during multi-position operation.

Acceleration/Deceleration time: Indicates the time taken for the motor to change from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm] at a constant speed.

Interval time: interval time that starts from the end of the last reference to the beginning of the next reference

**H11.04****Displacement reference type**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2011-05h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |

|          |   |            |           |
|----------|---|------------|-----------|
| Max.:    | 1 | Data Type: | UInt16    |
| Default: | 0 | Change:    | Real-time |

**Value Range:**

0: Relative displacement reference

1: Absolute displacement reference

**Description**

Relative displacement: position increment of the target position relative to the current motor position

Absolute displacement: position increment of the target position relative to the motor home.

**H11.05 Starting displacement No. in sequential operation**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-06h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 16       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–16

**Description**

Defines whether to perform cyclic operation and the starting displacement No. after the first cycle of operation in the sequential operation mode (H11.00 = 3).

0: The drive executes the displacements defined by H11.01 only once and then stops. The motor is in the locked state.

1 to 16: The drive operates cyclically, with the starting displacement No. defined by H11.05 after the first cycle of operation. The value of H11.05 should be lower than or equal to H11.01.

**H11.09 Deceleration upon axis control OFF**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-0Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 65535    | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.10 Starting speed of displacement 1**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2011-0Bh | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |      |            |              |
|----------|------|------------|--------------|
| Min.:    | 0    | Unit:      | [mm/s]/[rpm] |
| Max.:    | 6000 | Data Type: | UInt16       |
| Default: | 0    | Change:    | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–6000[mm/s]/[rpm]

**Description**

-

**H11.11 Stop speed of displacement 1**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2011-0Ch | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 6000     | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–6000[mm/s]/[rpm]

**Description**

-

**H11.12 Displacement 1**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2011-0Dh    | Effective mode: | Real time      |
| Min.:    | -1073741824 | Unit:           | Reference unit |
| Max.:    | 1073741824  | Data Type:      | Int32          |
| Default: | 10000       | Change:         | Real-time      |

**Value Range:**

-1073741824 to 1073741824

**Description**

Defines displacement 1 (reference unit) in multi-position operation.

**H11.14 Max. speed of displacement 1**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2011-0Fh | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 200      | Change:         | Real-time    |

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the maximum speed of displacement 1 in multi-position operation.  
The maximum speed is the average operating speed when the motor is not in the acceleration/deceleration process. If H11.12 is set to a too low value, the actual motor speed will be lower than H11.14.

**H11.15      Acc/Dec time of displacement 1**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-10h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Defines the time for the motor to change from 0 [mm/s]/[rpm] to 1000 rpm[mm/s]/[rpm] at a constant speed during displacement 1.

**H11.16      Interval time after displacement 1**

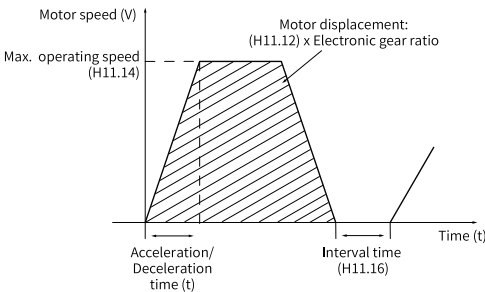
|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-11h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms (s)    |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

Defines the interval time that starts from the end of displacement 1 to the beginning of the next displacement.



**H11.17 Displacement 2**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2011-12h    | Effective mode: | Real time      |
| Min.:    | -1073741824 | Unit:           | Reference unit |
| Max.:    | 1073741824  | Data Type:      | Int32          |
| Default: | 10000       | Change:         | Real-time      |

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.19 Max. speed of displacement 2**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2011-14h | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 200      | Change:         | Real-time    |

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.20 Acc/Dec time of displacement 2**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-15h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.21 Interval time after displacement 2**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-16h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms (s)    |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.22****Displacement 3**

Hex: 2011-17h

Effective Real time

mode:

Min.: -1073741824

Unit: Reference unit

Max.: 1073741824

Data Type: Int32

Default: 10000

Change: Real-time

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.24****Max. speed of displacement 3**

Hex: 2011-19h

Effective Real time

mode:

Min.: 1

Unit: [mm/s]/[rpm]

Max.: 10000

Data Type: UInt16

Default: 200

Change: Real-time

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.25****Acc/Dec time of displacement 3**

Hex: 2011-1Ah

Effective Real time

mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.26****Interval time after displacement 3**

Hex: 2011-1Bh

Effective Real time

mode:

Min.: 0

Unit: ms (s)

Max.: 10000

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.27 Displacement 4**

Hex: 2011-1Ch

Effective Real time

mode:

Min.: -1073741824

Unit: Reference unit

Max.: 1073741824

Data Type: Int32

Default: 10000

Change: Real-time

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.29 Max. speed of displacement 4**

Hex: 2011-1Eh

Effective Real time

mode:

Min.: 1

Unit: [mm/s]/[rpm]

Max.: 10000

Data Type: UInt16

Default: 200

Change: Real-time

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.30 Acc/Dec time of displacement 4**

Hex: 2011-1Fh

Effective Real time

mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

-



**H11.31 Interval time after displacement 4**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-20h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms (s)    |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.32 Displacement 5**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2011-21h    | Effective mode: | Real time      |
| Min.:    | -1073741824 | Unit:           | Reference unit |
| Max.:    | 1073741824  | Data Type:      | Int32          |
| Default: | 10000       | Change:         | Real-time      |

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.34 Max. speed of displacement 5**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2011-23h | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 200      | Change:         | Real-time    |

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.35 Acc/Dec time of displacement 5**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-24h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.36 Interval time after displacement 5**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-25h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms (s)    |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.37 Displacement 6**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2011-26h    | Effective mode: | Real time      |
| Min.:    | -1073741824 | Unit:           | Reference unit |
| Max.:    | 1073741824  | Data Type:      | Int32          |
| Default: | 10000       | Change:         | Real-time      |

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.39 Max. speed of displacement 6**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2011-28h | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 200      | Change:         | Real-time    |

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.40 Acc/Dec time of displacement 6**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2011-29h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | ms        |
| Max.: | 65535    | Data Type:      | UInt16    |

Default: 10

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.41 Interval time after displacement 6**

Hex: 2011-2Ah

Effective mode: Real time

Min.: 0

Unit: ms (s)

Max.: 10000

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.42 Displacement 7**

Hex: 2011-2Bh

Effective mode: Real time

Min.: -1073741824

Unit: Reference unit

Max.: 1073741824

Data Type: Int32

Default: 10000

Change: Real-time

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.44 Max. speed of displacement 7**

Hex: 2011-2Dh

Effective mode: Real time

Min.: 1

Unit: [mm/s]/[rpm]

Max.: 10000

Data Type: UInt16

Default: 200

Change: Real-time

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.45 Acc/Dec time of displacement 7**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-2Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.46 Interval time after displacement 7**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-2Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms (s)    |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.47 Displacement 8**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2011-30h    | Effective mode: | Real time      |
| Min.:    | -1073741824 | Unit:           | Reference unit |
| Max.:    | 1073741824  | Data Type:      | Int32          |
| Default: | 10000       | Change:         | Real-time      |

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.49 Max. speed of displacement 8**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2011-32h | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 200      | Change:         | Real-time    |

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.50 Acc/Dec time of displacement 8**

Hex: 2011-33h

Effective Real time

mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.51 Interval time after displacement 8**

Hex: 2011-34h

Effective Real time

mode:

Min.: 0

Unit: ms (s)

Max.: 10000

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.52 Displacement 9**

Hex: 2011-35h

Effective Real time

mode:

Min.: -1073741824

Unit: Reference unit

Max.: 1073741824

Data Type: Int32

Default: 10000

Change: Real-time

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.54 Max. speed of displacement 9**

Hex: 2011-37h

Effective Real time

mode:

Min.: 1

Unit: [mm/s]/[rpm]

Max.: 10000

Data Type: UInt16

Change: Real-time

$$1[\text{mm/s}]/[\text{rpm}]-10000[\text{mm/s}]/[\text{rpm}]$$

—

## Hex: 2011-38h

Effective      Real time  
mode:

Unit: ms

Data Type: UInt16

Change: Real-time

## 0 ms to 65535 ms

—

## Hex: 2011-39h

Effective mode:      Real time

Unit: ms (s)

Data Type: UInt16

Change: Real-time

0 ms(s) to 10000 ms(s)

1

## Hex: 2011-3Ah

Effective      Real time  
mode:

Unit:            Reference unit

Data Type: Int32

Change: Real-time

-1073741824 to 1073741824

## 1

|               |                                            |             |                             |
|---------------|--------------------------------------------|-------------|-----------------------------|
| <b>H11.59</b> | <b>Max. speed of displacement 10</b>       |             |                             |
|               | Hex:                                       | 2011-3Ch    | Effective    Real time      |
|               |                                            |             | mode:                       |
|               | Min.:                                      | 1           | Unit:        [mm/s]/[rpm]   |
|               | Max.:                                      | 10000       | Data Type: UInt16           |
|               | Default:                                   | 200         | Change:    Real-time        |
|               | <b>Value Range:</b>                        |             |                             |
|               | 1[mm/s]/[rpm]–10000[mm/s]/[rpm]            |             |                             |
|               | <b>Description</b>                         |             |                             |
|               | -                                          |             |                             |
| <b>H11.60</b> | <b>Acc/Dec time of displacement 10</b>     |             |                             |
|               | Hex:                                       | 2011-3Dh    | Effective    Real time      |
|               |                                            |             | mode:                       |
|               | Min.:                                      | 0           | Unit:        ms             |
|               | Max.:                                      | 65535       | Data Type: UInt16           |
|               | Default:                                   | 10          | Change:    Real-time        |
|               | <b>Value Range:</b>                        |             |                             |
|               | 0 ms to 65535 ms                           |             |                             |
|               | <b>Description</b>                         |             |                             |
|               | -                                          |             |                             |
| <b>H11.61</b> | <b>Interval time after displacement 10</b> |             |                             |
|               | Hex:                                       | 2011-3Eh    | Effective    Real time      |
|               |                                            |             | mode:                       |
|               | Min.:                                      | 0           | Unit:        ms (s)         |
|               | Max.:                                      | 10000       | Data Type: UInt16           |
|               | Default:                                   | 10          | Change:    Real-time        |
|               | <b>Value Range:</b>                        |             |                             |
|               | 0 ms(s) to 10000 ms(s)                     |             |                             |
|               | <b>Description</b>                         |             |                             |
|               | -                                          |             |                             |
| <b>H11.62</b> | <b>Displacement 11</b>                     |             |                             |
|               | Hex:                                       | 2011-3Fh    | Effective    Real time      |
|               |                                            |             | mode:                       |
|               | Min.:                                      | -1073741824 | Unit:        Reference unit |
|               | Max.:                                      | 1073741824  | Data Type: Int32            |
|               | Default:                                   | 10000       | Change:    Real-time        |
|               | <b>Value Range:</b>                        |             |                             |
|               | -1073741824 to 1073741824                  |             |                             |

**Description**

-

**H11.64****Max. speed of displacement 11**

Hex: 2011-41h

Effective Real time

mode:

Min.: 1

Unit: [mm/s]/[rpm]

Max.: 10000

Data Type: UInt16

Default: 200

Change: Real-time

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.65****Acc/Dec time of displacement 11**

Hex: 2011-42h

Effective Real time

mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.66****Interval time after displacement 11**

Hex: 2011-43h

Effective Real time

mode:

Min.: 0

Unit: ms (s)

Max.: 10000

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.67****Displacement 12**

Hex: 2011-44h

Effective Real time

mode:

Min.: -1073741824

Unit: Reference unit

Max.: 1073741824

Data Type: Int32



Default: 10000                      Change: Real-time  
**Value Range:**  
-1073741824 to 1073741824  
**Description**  
-

**H11.69      Max. speed of displacement 12**

Hex: 2011-46h                      Effective      Real time  
mode:  
Min.: 1                      Unit: [mm/s]/[rpm]  
Max.: 10000                      Data Type: UInt16  
Default: 200                      Change: Real-time  
**Value Range:**  
1[mm/s]/[rpm]–10000[mm/s]/[rpm]  
**Description**  
-

**H11.70      Acc/Dec time of displacement 12**

Hex: 2011-47h                      Effective      Real time  
mode:  
Min.: 0                      Unit: ms  
Max.: 65535                      Data Type: UInt16  
Default: 10                      Change: Real-time  
**Value Range:**  
0 ms to 65535 ms  
**Description**  
-

**H11.71      Interval time after displacement 12**

Hex: 2011-48h                      Effective      Real time  
mode:  
Min.: 0                      Unit: ms (s)  
Max.: 10000                      Data Type: UInt16  
Default: 10                      Change: Real-time  
**Value Range:**  
0 ms(s) to 10000 ms(s)  
**Description**  
-

|               |                                                        |             |                 |
|---------------|--------------------------------------------------------|-------------|-----------------|
| <b>H11.72</b> | <b>Displacement 13</b>                                 |             |                 |
|               | Hex:                                                   | 2011-49h    | Effective mode: |
|               | Min.:                                                  | -1073741824 | Unit:           |
|               | Max.:                                                  | 1073741824  | Data Type:      |
|               | Default:                                               | 10000       | Change:         |
|               | <b>Value Range:</b><br>-1073741824 to 1073741824       |             |                 |
| <b>H11.74</b> | <b>Max. speed of displacement 13</b>                   |             |                 |
|               | Hex:                                                   | 2011-4Bh    | Effective mode: |
|               | Min.:                                                  | 1           | Unit:           |
|               | Max.:                                                  | 10000       | Data Type:      |
|               | Default:                                               | 200         | Change:         |
|               | <b>Value Range:</b><br>1[mm/s]/[rpm]–10000[mm/s]/[rpm] |             |                 |
| <b>H11.75</b> | <b>Acc/Dec time of displacement 13</b>                 |             |                 |
|               | Hex:                                                   | 2011-4Ch    | Effective mode: |
|               | Min.:                                                  | 0           | Unit:           |
|               | Max.:                                                  | 65535       | Data Type:      |
|               | Default:                                               | 10          | Change:         |
|               | <b>Value Range:</b><br>0 ms to 65535 ms                |             |                 |
| <b>H11.76</b> | <b>Interval time after displacement 13</b>             |             |                 |
|               | Hex:                                                   | 2011-4Dh    | Effective mode: |
|               | Min.:                                                  | 0           | Unit:           |
|               | Max.:                                                  | 10000       | Data Type:      |
|               | Default:                                               | 10          | Change:         |
|               | <b>Value Range:</b><br>0 ms(s) to 10000 ms(s)          |             |                 |

**Description**

-

**H11.77****Displacement 14**

Hex: 2011-4Eh

Effective Real time

mode:

Min.: -1073741824

Unit: Reference unit

Max.: 1073741824

Data Type: Int32

Default: 10000

Change: Real-time

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.79****Max. speed of displacement 14**

Hex: 2011-50h

Effective Real time

mode:

Min.: 1

Unit: [mm/s]/[rpm]

Max.: 10000

Data Type: UInt16

Default: 200

Change: Real-time

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.80****Acc/Dec time of displacement 14**

Hex: 2011-51h

Effective Real time

mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.81****Interval time after displacement 14**

Hex: 2011-52h

Effective Real time

mode:

Min.: 0

Unit: ms (s)

Max.: 10000

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.82****Displacement 15**

Hex: 2011-53h

Effective Real time

mode:

Min.: -1073741824

Unit: Reference unit

Max.: 1073741824

Data Type: Int32

Default: 10000

Change: Real-time

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.84****Max. speed of displacement 15**

Hex: 2011-55h

Effective Real time

mode:

Min.: 1

Unit: [mm/s]/[rpm]

Max.: 10000

Data Type: UInt16

Default: 200

Change: Real-time

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.85****Acc/Dec time of displacement 15**

Hex: 2011-56h

Effective Real time

mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.86 Interval time after displacement 15**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-57h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms (s)    |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.87 Displacement 16**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2011-58h    | Effective mode: | Real time      |
| Min.:    | -1073741824 | Unit:           | Reference unit |
| Max.:    | 1073741824  | Data Type:      | Int32          |
| Default: | 10000       | Change:         | Real-time      |

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.89 Max. speed of displacement 16**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2011-5Ah | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 200      | Change:         | Real-time    |

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.90 Acc/Dec time of displacement 16**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-5Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.91 Interval time after displacement 16**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-5Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms (s)    |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**2.18 H12 Multi-Speed****H12.00 Multi-speed operation mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-01h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

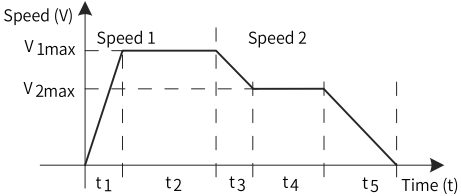
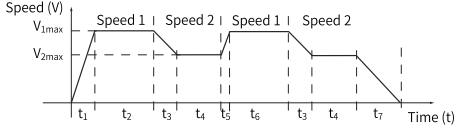
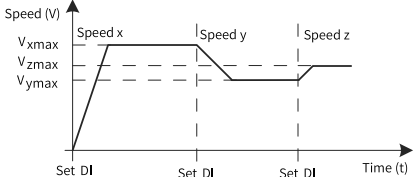
0: Individual operation (number of speeds selected in H12.01)

1: Cyclic operation (number of speeds selected in H12.01)

2: DI-based operation

**Description**

Defines the multi-speed operation mode when the speed reference source is multi-speed reference ( $H06.01 = 5$ ,  $H06.02 = 1/2/3$ ) in the speed control mode. The S-ON signal must be active during operation of each speed. Otherwise, the drive stops immediately as defined by H02.05 (Stop mode at S-ON OFF). The speed reach signal (FunOUT.19: V-Arr) is activated each time when a speed reference value is reached.

| Value | Operation Mode       | Remarks                                                                                                                                                                                                                                                                                            | Operation Curve                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0     | Individual operation | The drive stops after one cycle of operation.<br>The drive switches to the next displacement automatically.                                                                                                                                                                                        |  <p>Speed (V)</p> <p>Speed 1      Speed 2</p> <p><math>V_{1max}</math></p> <p><math>V_{2max}</math></p> <p><math>t_1</math>   <math>t_2</math>   <math>t_3</math>   <math>t_4</math>   <math>t_5</math>   Time (t)</p> <p><math>V_{1max}</math>, <math>V_{2max}</math> : reference values of speed 1 and speed 2<br/> <math>t_1</math> : actual acceleration/deceleration time of speed 1<br/> <math>t_3</math>, <math>t_5</math> : acceleration/deceleration time of speed 2</p>                                                             |
| 1     | Cyclic operation     | The drive starts from speed 1 after each cycle of operation.<br>The drive automatically switches to the next speed.<br>The cyclic operation state remains active as long as the S-ON signal is active.                                                                                             |  <p>Speed (V)</p> <p>Speed 1   Speed 2   Speed 1   Speed 2</p> <p><math>V_{1max}</math></p> <p><math>V_{2max}</math></p> <p><math>t_1</math>   <math>t_2</math>   <math>t_3</math>   <math>t_4</math>   <math>t_5</math>   <math>t_6</math>   <math>t_7</math>   <math>t_8</math>   Time (t)</p> <p><math>V_{1max}</math>, <math>V_{2max}</math> : maximum operating speeds in displacement 1 and displacement 2</p>                                                                                                                          |
| 2     | External DI signal   | The drive operates continuously as long as the S-ON signal is active.<br>The speed No. is determined by the DI logic.<br>The operating time of each speed is determined only by the interval time of speed switchover.<br>The speed reference direction can be switched through FunIN.5 (DIR-SEL). |  <p>Speed (V)</p> <p>Speed x      Speed y      Speed z</p> <p><math>V_{xmax}</math></p> <p><math>V_{zmax}</math></p> <p><math>V_{ymax}</math></p> <p>Set DI      Set DI      Set DI      Time (t)</p> <p>x, y: speed No. (The relationship between the speed No. and the DI logic is described below.)<br/> <math>V_x</math>, <math>V_y</math>: speed references for speeds x and y<br/> The speed No. determined by DI does not change, which means the speed reference operates continuously regardless of the reference operating time.</p> |

## H12.01 Number of speed references in multi-speed mode

Hex: 2012-02h

Effective      Real time  
mode:

Min.: 1

Unit: -

Max.: 16

Data Type: UInt16

Default: 16

Change: At stop

**Value Range:**

1–16

**Description**

Defines the total number of speed references in the multi-speed mode. Different speed references, operating time, and acceleration/deceleration time (four groups optional) can be set for each speed.

H12.00 ≠ 2: Speeds are switched automatically in a sequence from 1, 2...

H12.01.

H12.00 is 2: Assign four DIs (Hardware DI or VDI) with DI functions 6 to 9 (FunIN.6: CMD1 to FunIN.9: CMD4) and control the DI logic through the host controller to switch between different speeds. The displacement No. is a 4-bit binary value. Bits 0 to 3 correspond to CMD1 to CMD4.

| FunIN.9 | FunIN.8 | FunIN.7 | FunIN.6 | Segment No. |
|---------|---------|---------|---------|-------------|
| CMD4    | CMD3    | CMD2    | CMD1    |             |
| 0       | 0       | 0       | 0       | 1           |
| 0       | 0       | 0       | 1       | 2           |
| ...     |         |         |         |             |
| 1       | 1       | 1       | 1       | 16          |

The value of CMD(n) is 1 upon active DI logic and 0 upon inactive DI logic.

**H12.02****Operating time unit**

Hex: 2012-03h

Effective mode:

Real time

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0: s

1: min

**Description**

Defines the time unit of multi-speed operation.

0: s

1: min

**H12.03****Acceleration time 1**

Hex: 2012-04h

Effective mode:

Real time

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**



0 ms to 65535 ms

**Description**

Four groups of acceleration/deceleration time can be set for each speed reference.

Acceleration time: time for the motor to accelerate from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm] at a constant speed.

**H12.04****Deceleration time 1**

Hex: 2012-05h

Effective      Real time  
mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

Four groups of acceleration/deceleration time can be set for each speed reference.

Deceleration time: time for the motor to decelerate from 1000 [mm/s]/[rpm] to 0 [mm/s]/[rpm] at a constant speed.

**H12.05****Acceleration time 2**

Hex: 2012-06h

Effective      Real time  
mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 50

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

Four groups of acceleration/deceleration time can be set for each speed reference.

Acceleration time: time for the motor to accelerate from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm] at a constant speed.

**H12.06****Deceleration time 2**

Hex: 2012-07h

Effective      Real time  
mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 50

Change: Real-time

**Value Range:**

0 ms to 65535 ms

### Description

Four groups of acceleration/deceleration time can be set for each speed reference.

Deceleration time: time for the motor to decelerate from 1000 [mm/s]/[rpm] to 0 [mm/s]/[rpm] at a constant speed.

## H12.07

### Acceleration time 3

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-08h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

### Value Range:

0 ms to 65535 ms

### Description

Four groups of acceleration/deceleration time can be set for each speed reference.

Acceleration time: time for the motor to accelerate from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm] at a constant speed.

## H12.08

### Deceleration time 3

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-09h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

### Value Range:

0 ms to 65535 ms

### Description

Four groups of acceleration/deceleration time can be set for each speed reference.

Deceleration time: time for the motor to decelerate from 1000 [mm/s]/[rpm] to 0 [mm/s]/[rpm] at a constant speed.

## H12.09

### Acceleration time 4

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-0Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 150      | Change:         | Real-time |

### Value Range:

0 ms to 65535 ms

**Description**

Four groups of acceleration/deceleration time can be set for each speed reference.

Acceleration time: time for the motor to accelerate from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm] at a constant speed.

**H12.10****Deceleration time 4**

Hex: 2012-0Bh

Effective Real time  
mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 150

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

Four groups of acceleration/deceleration time can be set for each speed reference.

Deceleration time: time for the motor to decelerate from 1000 [mm/s]/[rpm] to 0 [mm/s]/[rpm] at a constant speed.

**H12.20****1st speed reference**

Hex: 2012-15h

Effective Real time  
mode:

Min.: -10000

Unit: [mm/s]/[rpm]

Max.: 10000

Data Type: Int16

Default: 0

Change: Real-time

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.21****Operating time of speed 1**

Hex: 2012-16h

Effective Real time  
mode:

Min.: 0.0

Unit: s (m)

Max.: 6553.5

Data Type: UInt16

Default: 5.0

Change: Real-time

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

Defines the operating time of speed 1.

The operating time is the sum of the speed variation time from previous speed reference to present speed reference plus the average operating time of present speed reference.

If the operating time is set to 0, the drive skips this speed reference automatically.

As long as H12.00 (Multi-speed operation mode) is set to 2 (DI-based operation) and the speed No. determined by the external DI does not change, the drive continues operating at the speed defined by this speed reference, without being affected by the reference operating time.

## H12.22 Acc./dec. time of speed 1

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-17h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

### Value Range:

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

### Description

Defines the acceleration/deceleration time of speed 1.

0: Zero acceleration/deceleration time (acceleration time: 0; deceleration time: 0)

1: Acceleration/Deceleration time 1 (acceleration time: H12.03; deceleration time: H12.04)

2: Acceleration/Deceleration time 2 (acceleration time: H12.05; deceleration time: H12.06)

3: Acceleration/Deceleration time 3 (acceleration time: H12.07; deceleration time: H12.08)

4: Acceleration/Deceleration time 4 (acceleration time: H12.09; deceleration time: H12.10)

## H12.23 Reference 2

|       |          |                 |              |
|-------|----------|-----------------|--------------|
| Hex:  | 2012-18h | Effective mode: | Real time    |
| Min.: | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.: | 10000    | Data Type:      | Int16        |

|                       |          |                 |           |
|-----------------------|----------|-----------------|-----------|
| Hex:                  | 2012-19h | Effective mode: | Real time |
| Min.:                 | 0.0      | Unit:           | s (m)     |
| Max.:                 | 6553.5   | Data Type:      | UInt16    |
| Default:              | 5.0      | Change:         | Real-time |
| <b>Value Range:</b>   |          |                 |           |
| 0.0s(m) to 6553.5s(m) |          |                 |           |
| <b>Description</b>    |          |                 |           |
| -                     |          |                 |           |

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-1Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-1Bh | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | 300      | Change:         | Real-time    |

**Value Range:**  
-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.27 Operating time of speed 3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-1Ch | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.28 Acc./dec. time of speed 3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-1Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.29 Reference 4**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-1Eh | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | 500      | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.30 Operating time of speed 4**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-1Fh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.31 Acc./dec. time of speed 4**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-20h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.32 Reference 5**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-21h | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | 700      | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.33 Operating time of speed 5**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2012-22h | Effective mode: | Real time |
| Min.: | 0.0      | Unit:           | s (m)     |

|          |        |            |           |
|----------|--------|------------|-----------|
| Max.:    | 6553.5 | Data Type: | UInt16    |
| Default: | 5.0    | Change:    | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.34 Acc./dec. time of speed 5**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-23h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.35 Reference 6**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-24h | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | 900      | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.36 Operating time of speed 6**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-25h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)



**Description**

-

**H12.37 Acc./dec. time of speed 6**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-26h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.38 Reference 7**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-27h | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | 600      | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.39 Operating time of speed 7**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-28h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.40 Acc./dec. time of speed 7**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-29h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.41 Reference 8**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-2Ah | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | 300      | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.42 Operating time of speed 8**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-2Bh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.43 Acc./dec. time of speed 8**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2012-2Ch | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |

Max.: 65535                      Data Type: UInt16  
Default: 256                      Change: Real-time

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.44      Reference 9**

Hex: 2012-2Dh                      Effective      Real time  
mode:  
Min.: -10000                      Unit: [mm/s]/[rpm]  
Max.: 10000                      Data Type: Int16  
Default: 100                      Change: Real-time

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.45      Operating time of speed 9**

Hex: 2012-2Eh                      Effective      Real time  
mode:  
Min.: 0.0                      Unit: s (m)  
Max.: 6553.5                      Data Type: UInt16  
Default: 5.0                      Change: Real-time

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.46      Acc./dec. time of speed 9**

Hex: 2012-2Fh                      Effective      Real time  
mode:  
Min.: 0                      Unit: -  
Max.: 65535                      Data Type: UInt16  
Default: 256                      Change: Real-time

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

### Description

Same as H12.22.

## H12.47

### Reference 10

Hex: 2012-30h

Effective Real time

mode:

Min.: -10000

Unit: [mm/s]/[rpm]

Max.: 10000

Data Type: Int16

Default: -100

Change: Real-time

### Value Range:

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

### Description

-

## H12.48

### Operating time of speed 10

Hex: 2012-31h

Effective Real time

mode:

Min.: 0.0

Unit: s (m)

Max.: 6553.5

Data Type: UInt16

Default: 5.0

Change: Real-time

### Value Range:

0.0s(m) to 6553.5s(m)

### Description

-

## H12.49

### Acc./dec. time of speed 10

Hex: 2012-32h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 256

Change: Real-time

### Value Range:

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.50****Reference 11**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-33h | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | -300     | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.51****Operating time of speed 11**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-34h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.52****Acc./dec. time of speed 11**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-35h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.53****Reference 12**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-36h | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | -500     | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.54****Operating time of speed 12**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-37h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.55****Acc./dec. time of speed 12**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-38h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.56****Reference 13**

|       |          |                 |              |
|-------|----------|-----------------|--------------|
| Hex:  | 2012-39h | Effective mode: | Real time    |
| Min.: | -10000   | Unit:           | [mm/s]/[rpm] |

|          |       |            |           |
|----------|-------|------------|-----------|
| Max.:    | 10000 | Data Type: | Int16     |
| Default: | -700  | Change:    | Real-time |

**Value Range:**

-10000[mm/s]/[rpm]-10000[mm/s]/[rpm]

### Description

—

### H12.57 Operating time of speed 13

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-3Ah | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

### Description

—

**H12.58**      **Acc./dec. time of speed 13**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-3Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

## 2: Acceleration/Deceleration time 2

### 3: Acceleration/Deceleration time 3

#### 4: Acceleration/Deceleration time 4

### Description

Same as H12.22.

**H12.59**      **Reference 14**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-3Ch | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | -900     | Change:         | Real-time    |

**Value Range:**

$$-10000[\text{mm/s}]/[\text{rpm}]-10000[\text{mm/s}]/[\text{rpm}]$$

**Description**

-

**H12.60****Operating time of speed 14**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-3Dh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.61****Acc./dec. time of speed 14**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-3Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.62****Reference 15**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-3Fh | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | -600     | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-



**H12.63      Operating time of speed 15**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-40h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.64      Acc./dec. time of speed 15**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-41h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.65      Reference 16**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-42h | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | -300     | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.66      Operating time of speed 16**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2012-43h | Effective mode: | Real time |
| Min.: | 0.0      | Unit:           | s (m)     |

|                       |        |            |           |
|-----------------------|--------|------------|-----------|
| Max.:                 | 6553.5 | Data Type: | UInt16    |
| Default:              | 5.0    | Change:    | Real-time |
| <b>Value Range:</b>   |        |            |           |
| 0.0s(m) to 6553.5s(m) |        |            |           |
| <b>Description</b>    |        |            |           |
| -                     |        |            |           |

**H12.67 Acc./dec. time of speed 16**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-44h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**2.19 H14 Gantry Synchronization****H14.00 Gantry communication state**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2014-01h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 1        | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–1

**Description**

Used to judge whether both axes have established communication after the gantry function is enabled.

**H14.01 Gantry alignment state**

|       |          |                 |   |
|-------|----------|-----------------|---|
| Hex:  | 2014-02h | Effective mode: | - |
| Min.: | 0        | Unit:           | - |

|          |   |            |              |
|----------|---|------------|--------------|
| Max.:    | 1 | Data Type: | UInt16       |
| Default: | 0 | Change:    | Unchangeable |

**Value Range:**

0–1

**Description**

After the gantry alignment is completed, the gantry alignment state will be set to 1 to determine whether the gantry alignment is completed.

**H14.02 Gantry function selection**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2014-03h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: None

1: Gantry synchronization

**Description**

Gantry function selection.

0: Disabled

1: Enabled

**H14.03 Gantry axis attribute (master-slave)**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2014-04h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Slave axis

1: Master axis

**Description**

Selects the gantry axis attribute.

0: Slave axis

1: Master axis

**H14.04 Gantry mechanical attribute**

|       |          |                 |                        |
|-------|----------|-----------------|------------------------|
| Hex:  | 2014-05h | Effective mode: | Upon the next power-on |
| Min.: | 0        | Unit:           | -                      |
| Max.: | 3        | Data Type:      | UInt16                 |

Default: 0

Change: At stop

**Value Range:**

0: Rigid gantry scheme 1-Two-axis position control

1: Flexible gantry scheme 1-Two-axis position control

2: Rigid gantry scheme 2-Master axis position control and slave axis torque control

**Description**

The gantry mechanical attribute is related to the mechanical structure type of the gantry, which can be divided into rigid crossbeam frame connection and flexible crossbeam frame connection.

0: Rigid crossbeam frame, "axis sticking" may occur if both axes deviate too much

1: Flexible crossbeam frame, sync deviation is allowed between both axes

2: Rigid crossbeam frame, suitable for applications do not require high accuracy

**H14.05 Current axis position sync direction**

Hex: 2014-06h

Effective mode: Upon the next power-on

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0: Forward

1: Reverse

**Description**

The synchronous direction of the two axes is related to the installation direction of the motor and the rotation direction of H02.02.

0: Forward

1: Reverse

**H14.07 Gantry sync enable**

Hex: 2014-08h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 2

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Disabled

1: Enabled

2: DI-enabled

**Description**

Selects the gantry synchronization enable mode to adjust the gain of gantry slave axis compensation. When it is enabled, H14.08–H14.11 will take effect.

0: Disabled

1: Enabled

2: DI-enabled

#### **H14.08 Gantry sync position loop proportional gain**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-09h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 300.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

##### **Value Range:**

0.0% to 300.0%

##### **Description**

It is only effective for the slave axis.

#### **H14.09 Gantry sync position loop integral time constant**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-0Ah | Effective mode: | Real time |
| Min.:    | 0.5      | Unit:           | ms        |
| Max.:    | 1000.0   | Data Type:      | UInt16    |
| Default: | 1000.0   | Change:         | Real-time |

##### **Value Range:**

0.5 ms to 1000.0 ms

##### **Description**

It is only effective for the slave axis.

#### **H14.10 Gantry sync speed loop proportional gain**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-0Bh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 300.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

##### **Value Range:**

0.0% to 300.0%

##### **Description**

It is only effective for the slave axis.

**H14.11 Gantry sync speed loop integral time constant**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-0Ch | Effective mode: | Real time |
| Min.:    | 0.5      | Unit:           | ms        |
| Max.:    | 1000.0   | Data Type:      | UInt16    |
| Default: | 1000.0   | Change:         | Real-time |

**Value Range:**

0.5 ms to 1000.0 ms

**Description**

It is only effective for the slave axis.

**H14.12 Gantry sync speed limit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-0Dh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | RPM       |
| Max.:    | 6000.0   | Data Type:      | UInt16    |
| Default: | 50.0     | Change:         | Real-time |

**Value Range:**

0.0rpm to 6000.0rpm

**Description**

Gantry sync speed limit.

**H14.13 Gantry alignment speed**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-0Eh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | RPM       |
| Max.:    | 3000.0   | Data Type:      | UInt16    |
| Default: | 10.0     | Change:         | Real-time |

**Value Range:**

0.0rpm to 3000.0rpm

**Description**

Gantry alignment speed

**H14.14 Gantry alignment acc./dec. time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-0Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 1000     | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

**Value Range:**

0 ms–1000 ms

**Description**

Gantry alignment acc./dec. time

**H14.18 Torque pre-alignment before gantry homing**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-13h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: No operation

1: Enabled

**Description**

Enables/disables torque pre-alignment before gantry homing.

0: Disabled

1: Enabled

**H14.20 Gantry aligned by default upon power-on**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2014-15h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 1        | Change:         | At stop                |

**Value Range:**

0: No operation

1: Align at first power-on

**Description**

Sets whether gantry alignment is performed by default upon power-on.

0: No operation

1: Aligned by default upon initial power-on of two axes

**H14.21 Gantry alignment mode**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2014-16h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 4        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Gantry homing alignment

2: Gantry torque alignment

3: Gantry enable alignment

4: Gantry DI alignment

**Description**

Gantry axis alignment mode

0: Gantry homing alignment

2: Gantry torque alignment

3: Gantry enable alignment

4: Gantry DI alignment

**H14.25 Flexible gantry homing - Master/slave home deviation auto-tuning**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2014-1Ah | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 2        | Data Type: | UInt16    |
| Default: | 0        | Change:    | Real-time |

**Value Range:**

0: Disabled

1: Torque alignment auto-tuning

2: Position auto-tuning

**Description**

Sets whether to perform master/slave home deviation auto-tuning when H14.04 is set to flexible gantry.

0: Disabled

1: Torque alignment auto-tuning

2: Position auto-tuning

**H14.26 Gantry torque alignment enable**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2014-1Bh | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 3        | Data Type: | UInt16    |
| Default: | 0        | Change:    | Real-time |

**Value Range:**

0: Disabled

1: Enabled

2: DI-enabled

3: Enabled at power-on

**Description**

Selects gantry torque alignment enable mode in gantry alignment mode.

0: Disabled

1: Enabled

2: DI-enabled

3: Enabled at power-on



**H14.27 Gantry torque alignment torque**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-1Ch | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 300.0    | Data Type:      | UInt16    |
| Default: | 10.0     | Change:         | Real-time |

**Value Range:**

0.0% to 300.0%

**Description**

Torque value in gantry torque alignment mode.

**H14.28 Gantry torque alignment count**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-1Dh | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 2        | Change:         | Real-time |

**Value Range:**

1–2

**Description**

The number of alignments in gantry torque alignment mode.

**H14.29 Gantry torque alignment speed**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-1Eh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | RPM       |
| Max.:    | 3000.0   | Data Type:      | UInt16    |
| Default: | 10.0     | Change:         | Real-time |

**Value Range:**

0.0rpm to 3000.0rpm

**Description**

The speed in gantry torque alignment mode.

**H14.30 Gantry torque alignment timeout alarm time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-1Fh | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | s         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

**Value Range:**

1s to 65535s

**Description**

Gantry torque alignment timeout alarm time

**H14.31 Gantry torque alignment acc./dec. time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-20h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 1000     | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

**Value Range:**

0 ms to 1000 ms

**Description**

Gantry torque alignment acc./dec. time

**H14.32 Gantry torque alignment zero speed threshold**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-21h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | RPM       |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 2.0      | Change:         | Real-time |

**Value Range:**

0.0rpm to 100.0rpm

**Description**

The zero speed threshold for gantry torque alignment.

**H14.33 Gantry torque alignment mechanical limit evaluation position loop period count**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-22h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 5        | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

Gantry torque alignment mechanical limit evaluation position loop period count

**H14.35 2-axis position deviation (encoder unit)**

|      |          |                 |   |
|------|----------|-----------------|---|
| Hex: | 2014-24h | Effective mode: | - |
|------|----------|-----------------|---|

|          |             |            |              |
|----------|-------------|------------|--------------|
| Min.:    | -2147483648 | Unit:      | p            |
| Max.:    | 2147483647  | Data Type: | Int32        |
| Default: | 0           | Change:    | Unchangeable |

**Value Range:**

-2147483648p to 2147483647p

**Description**

The position deviation (encoder unit) between the active axis and the paired axis in gantry mode. It is related to H0B.17 of the two axes.

**H14.37 2-axis speed deviation**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2014-26h | Effective mode: | -            |
| Min.:    | -32767   | Unit:           | RPM          |
| Max.:    | 32767    | Data Type:      | Int16        |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

-32767rpm to 32767rpm

**Description**

It is the speed difference between the active axis and paired axis in gantry mode.

**H14.38 Torque reference of active axis**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2014-27h | Effective mode: | -            |
| Min.:    | -32767   | Unit:           | %            |
| Max.:    | 3276.7   | Data Type:      | Int16        |
| Default: | 0.0      | Change:         | Unchangeable |

**Value Range:**

-3276.7% to 3276.7%

**Description**

Torque reference of active axis

**H14.39 Torque reference of paired axis**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2014-28h | Effective mode: | -            |
| Min.:    | -3276.7  | Unit:           | %            |
| Max.:    | 3276.7   | Data Type:      | Int16        |
| Default: | 0.0      | Change:         | Unchangeable |

**Value Range:**

-3276.7% to 3276.7%

**Description**

Torque reference of paired axis

**H14.40 Motor speed of active axis**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2014-29h | Effective mode: | -            |
| Min.:    | -32767   | Unit:           | RPM          |
| Max.:    | 32767    | Data Type:      | Int16        |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

-32767rpm to 32767rpm

**Description**

Motor speed of active axis

**H14.41 Motor speed of paired axis**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2014-2Ah | Effective mode: | -            |
| Min.:    | -32767   | Unit:           | RPM          |
| Max.:    | 32767    | Data Type:      | Int16        |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

-32767rpm to 32767rpm

**Description**

Motor speed of paired axis

**H14.44 Alarm time threshold of large gantry deviation**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-2Dh | Effective mode: | Real time |
| Min.:    | 0.5      | Unit:           | ms        |
| Max.:    | 1000.0   | Data Type:      | UInt16    |
| Default: | 3.0      | Change:         | Real-time |

**Value Range:**

0.5 ms–1000.0 ms

**Description**

The alarm time threshold of large gantry deviation.

**H14.45 Gantry position alarm threshold**

|       |             |                 |           |
|-------|-------------|-----------------|-----------|
| Hex:  | 2014-2Eh    | Effective mode: | Real time |
| Min.: | -2147483648 | Unit:           | p         |
| Max.: | 2147483647  | Data Type:      | Int32     |

Change: At stop

**Value Range:**

-2147483648p to 2147483647p

### Description

Gantry position alarm threshold.

#### H14.47 Large gantry position deviation alarm enable

Effective      Real time

mode:

Unit: -

Data Type: UInt16

Change: Real-time

**Value Range:**

0: Disabled

1: Enabled

### Description

Large gantry position deviation alarm enable

0: Disabled

1: Enabled

**H14.48 Alarm time threshold of large gantry torque deviation**

Effective      Real time

mode:

Unit: ms

Data Type: UInt16

Change: Real-time

**Value Range:**

0.5 ms–1000.0 ms

### Description

The alarm time threshold of large gantry torque deviation.

#### H14.49 Gantry torque deviation alarm threshold

Effective      Real time

mode:

Unit: %

Data Type: Int16

Change: At stop

**Value Range:**

0.0% to 800.0%

### Description

The alarm threshold for large gantry torque deviation.

**H14.50****Large gantry torque deviation alarm enable**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2014-33h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 1        | Data Type: | UInt16    |
| Default: | 0        | Change:    | Real-time |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Enables/disables large gantry torque deviation alarm.

0: Disabled

1: Enabled

**H14.52****Gantry mismatch**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2014-35h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 1451     | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–1451

**Description**

If the parameters of the two axes of the gantry do not match, they will be displayed.

**H14.71****Flexible gantry homing - Enable aligning slave axis homing position to home offset**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2014-48h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 1        | Data Type: | UInt16    |
| Default: | 0        | Change:    | Real-time |

**Value Range:**

0: No operation1: Enabled

**Description**

Flexible gantry homing - Enable aligning slave axis homing position to home offset

0: No operation

1: Enabled

**H14.74 Gantry scheme 2 slave axis enable**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-4Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: No operation

1: Enabled

**Description**

0: Slave axis not respond to position references in gantry scheme 2

1: Slave axis respond to position references in gantry scheme 2

## 2.20 H17 Virtual DI/DO

**H17.90 Communication VDI enable**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-5Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Disabled

1: Enabled

**Description**

To use the VDI function:

1. Set H17.90 to enable VDI.
2. Set the default level after power-on through H17.91.
3. Set the DI function of the VDI terminal through parameters in group H17.
4. Set VDI output through H31.00.

**H17.91 VDI default value after power-on**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2017-5Ch | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 65535    | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | Real-time              |

**Value Range:**

bit0: VDI1  
 bit1: VDI2  
 bit2: VDI3  
 bit3: VDI4  
 bit4: VDI5  
 bit5: VDI6  
 bit6: VDI7  
 bit7: VDI8  
 bit8: VDI9  
 bit9: VDI10  
 bit10: VDI11  
 bit11: VDI12  
 bit12: VDI13  
 bit13: VDI14  
 bit14: VDI15  
 bit15: VDI16

**Description**

Configures the initial value of VDI upon power-on.  
 Bit 0 corresponds to VDI1.  
 Bit 1 corresponds to VDI2.  
 ...  
 Bit 15 corresponds to VDI16.

**H17.00**

**VDI1 function selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-01h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 55       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

- 0: No function
- 1: Servo ON
- 2: Alarm reset signal
- 3: Gain switchover switch
- 4: Main/Auxiliary reference switchover
- 5: Multi-reference direction
- 6: Multi-reference switchover CMD1
- 7: Multi-reference switchover CMD2
- 8: Multi-reference switchover CMD3
- 9: Multi-reference switchover CMD4



- 10: Mode switchover M1-SEL
- 11: Mode switchover M2-SEL
- 12: Zero clamp enable
- 13: Position reference inhibited
- 14: Positive limit switch
- 15: Negative limit switch
- 16: Positive external torque limit
- 17: Negative external torque limit
- 18: Forward jog
- 19: Reverse jog
- 20: Step enable
- 21: Hand wheel override signal 1
- 22: Hand wheel override signal 2
- 23: Hand wheel enable
- 24: Electronic gear ratio selection
- 25: Torque reference direction
- 26: Speed reference direction
- 27: Position reference direction
- 28: Multi-position reference enable
- 29: Interrupt positioning cancel
- 31: Home switch
- 32: Homing enable
- 33: Interrupt positioning inhibited
- 34: Emergency stop
- 35: Clear position deviation
- 36: Internal speed limit source
- 37: Pulse reference inhibited
- 40: Multi-speed enable
- 41: Current position as the home
- 42: Axis control command executed immediately
- 43: Axis control command not executed immediately
- 44: Positioning and reference completed signal clear
- 46: Process segment enable
- 47: Process segment reference switchover 1
- 48: Process segment reference switchover 2
- 49: Process segment reference switchover 3

50: Process segment switch 4  
 51: Event-triggered process segment 1  
 52: Event-triggered process segment 2  
 53: Event-triggered process segment 3  
 54: Event-triggered process segment 4  
 55: Process segment halt  
 56: Gantry torque alignment  
 57: Gantry DI alignment enable  
 58: Gantry DI alignment clear  
 59: Gantry synchronization enable

**Description**

-

**H17.01 VDI1 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-02h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.02 VDI2 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-03h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 55       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

**Description**

-

**H17.03 VDI2 logic level selection**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2017-04h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 1        | Data Type:      | UInt16    |

Default: 0 Change: Real-time

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.04 VDI3 function**

Hex: 2017-05h Effective mode: Real time

Min.: 0 Unit: -  
Max.: 55 Data Type: UInt16  
Default: 0 Change: Real-time

**Value Range:**

See H17.00.

**Description**

-

**H17.05 VDI3 logic level selection**

Hex: 2017-06h Effective mode: Real time

Min.: 0 Unit: -  
Max.: 1 Data Type: UInt16  
Default: 0 Change: Real-time

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.06 VDI4 function**

Hex: 2017-07h Effective mode: Real time

Min.: 0 Unit: -  
Max.: 55 Data Type: UInt16  
Default: 0 Change: Real-time

**Value Range:**

See H17.00.

**Description**

-

**H17.07 VD14 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-08h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.08 VD15 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-09h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 55       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

**Description**

-

**H17.09 VD15 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-0Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.10 VD16 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-0Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 55       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

**Description**

-

**H17.11 VDI6 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-0Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.12 VDI7 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-0Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 55       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

**Description**

-

**H17.13 VDI7 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-0Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.14 VDI8 function**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2017-0Fh | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |    |            |           |
|----------|----|------------|-----------|
| Min.:    | 0  | Unit:      | -         |
| Max.:    | 45 | Data Type: | UInt16    |
| Default: | 0  | Change:    | Real-time |

**Value Range:**

See H17.00.

**Description**

-

**H17.15 VDI8 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-10h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.16 VDI9 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-11h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 55       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

**Description**

-

**H17.17 VDI9 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-12h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.18 VDI10 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-13h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 55       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

**Description**

-

**H17.19 VDI10 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-14h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.20 VDI11 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-15h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 45       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

**Description**

-

**H17.21 VDI11 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-16h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

### Description

-

## H17.22

### VDI12 function

Hex: 2017-17h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 55

Data Type: UInt16

Default: 0

Change: Real-time

### Value Range:

See H17.00.

### Description

-

## H17.23

### VDI12 logic level selection

Hex: 2017-18h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

### Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

### Description

-

## H17.24

### VDI13 function

Hex: 2017-19h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 55

Data Type: UInt16

Default: 0

Change: Real-time

### Value Range:

See H17.00.

### Description

-

## H17.25

### VDI13 logic level selection

Hex: 2017-1Ah

Effective mode: Real time



|          |   |            |           |
|----------|---|------------|-----------|
| Min.:    | 0 | Unit:      | -         |
| Max.:    | 1 | Data Type: | UInt16    |
| Default: | 0 | Change:    | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.26 VDI14 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-1Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 55       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

**Description**

-

**H17.27 VDI14 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-1Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.28 VDI15 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-1Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 55       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

**Description**

-

**H17.29 VDI15 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-1Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.30 VDI16 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-1Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 55       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

**Description**

-

**H17.31 VDI16 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-20h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.92 Communication VDO enable**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-5Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Disabled  
1: Enabled

**Description**

To use the VDO function:

1. Set H17.92 to enable VDO.
2. Set the default level after power-on through H17.93.
3. Set the DO function of the VDO terminal through parameters in group H17.
4. Read the output level of the VDO in H17.32.

**H17.93      VDO default value after power-on**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-5Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

bit0: VDO1  
bit1: VDO2  
bit2: VDO3  
bit3: VDO4  
bit4: VDO5  
bit5: VDO6  
bit6: VDO7  
bit7: VDO8  
bit8: VDO9  
bit9: VDO10  
bit10: VDO11  
bit11: VDO12  
bit12: VDO13  
bit13: VDO14  
bit14: VDO15  
bit15: VDO16

**Description**

Configures the initial value of VDO upon power-on.  
Bit 0 corresponds to VDO1.  
Bit 1 corresponds to VDO2.  
...  
Bit 15 corresponds to VDO16.

**H17.32      VDO virtual level**

|      |          |                 |   |
|------|----------|-----------------|---|
| Hex: | 2017-21h | Effective mode: | - |
|------|----------|-----------------|---|

|          |       |            |              |
|----------|-------|------------|--------------|
| Min.:    | 0     | Unit:      | -            |
| Max.:    | 65535 | Data Type: | UInt16       |
| Default: | 0     | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H17.33 VDO1 function selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-22h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 33       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: N/A

1: Servo ready

2: Motor rotating signal

3: Zero speed signal

4: Speed consistent signal

5: Positioning completed

6: Positioning approaches

7: Torque limited signal8: Speed limited signal

9: Braking

10: Alarm

11: Fault

15: Interrupt positioning completed

16: Homing completed

17: Electrical homing completed

18: Torque attained signal

19: Speed attained signal

21: Enable completed

22: Internal command completed

23: Allow to write the next command

24: Internal motion completed

26: Closed-loop state

27: Left limit

28: Right limit

30: Alarm or fault output

32: EDM output

33: Gantry alignment

**Description**

-

**H17.34 VDO1 logic level selection**

Hex: 2017-23h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.35 VDO2 function**

Hex: 2017-24h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 33

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

See H17.33.

**Description**

-

**H17.36 VDO2 logic level selection**

Hex: 2017-25h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.37 VDO3 function**

Hex: 2017-26h

Effective mode: Real time

|          |    |            |           |
|----------|----|------------|-----------|
| Min.:    | 0  | Unit:      | -         |
| Max.:    | 33 | Data Type: | UInt16    |
| Default: | 0  | Change:    | Real-time |

**Value Range:**

See H17.33.

**Description**

-

**H17.38 VDO3 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-27h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.39 VDO4 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-28h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 33       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.33.

**Description**

-

**H17.40 VDO4 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-29h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

|               |                                   |          |                 |
|---------------|-----------------------------------|----------|-----------------|
| <b>H17.41</b> | <b>VDO5 function</b>              |          |                 |
|               | Hex:                              | 2017-2Ah | Effective mode: |
|               | Min.:                             | 0        | Unit:           |
|               | Max.:                             | 33       | Data Type:      |
|               | Default:                          | 0        | Change:         |
|               | <b>Value Range:</b>               |          |                 |
|               | See H17.33.                       |          |                 |
|               | <b>Description</b>                |          |                 |
|               | -                                 |          |                 |
|               |                                   |          |                 |
| <b>H17.42</b> | <b>VDO5 logic level selection</b> |          |                 |
|               | Hex:                              | 2017-2Bh | Effective mode: |
|               | Min.:                             | 0        | Unit:           |
|               | Max.:                             | 1        | Data Type:      |
|               | Default:                          | 0        | Change:         |
|               | <b>Value Range:</b>               |          |                 |
|               | 0: Output 1 upon active logic     |          |                 |
|               | 1: Output 0 upon active logic     |          |                 |
|               | <b>Description</b>                |          |                 |
|               | -                                 |          |                 |
|               |                                   |          |                 |
| <b>H17.43</b> | <b>VDO6 function</b>              |          |                 |
|               | Hex:                              | 2017-2Ch | Effective mode: |
|               | Min.:                             | 0        | Unit:           |
|               | Max.:                             | 33       | Data Type:      |
|               | Default:                          | 0        | Change:         |
|               | <b>Value Range:</b>               |          |                 |
|               | See H17.33.                       |          |                 |
|               | <b>Description</b>                |          |                 |
|               | -                                 |          |                 |
|               |                                   |          |                 |
| <b>H17.44</b> | <b>VDO6 logic level selection</b> |          |                 |
|               | Hex:                              | 2017-2Dh | Effective mode: |
|               | Min.:                             | 0        | Unit:           |
|               | Max.:                             | 1        | Data Type:      |
|               | Default:                          | 0        | Change:         |
|               | <b>Value Range:</b>               |          |                 |

0: Output 1 upon active logic

1: Output 0 upon active logic

### Description

-

## H17.45

### VDO7 function

Hex: 2017-2Eh

Effective mode: Real time

Min.: 0

Unit: -

Max.: 33

Data Type: UInt16

Default: 0

Change: Real-time

### Value Range:

See H17.33.

### Description

-

## H17.46

### VDO7 logic level selection

Hex: 2017-2Fh

Effective mode: Real time

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

### Value Range:

0: Output 1 upon active logic

1: Output 0 upon active logic

### Description

-

## H17.47

### VDO8 function

Hex: 2017-30h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 33

Data Type: UInt16

Default: 0

Change: Real-time

### Value Range:

See H17.33.

### Description

-

## H17.48

### VDO8 logic level selection

Hex: 2017-31h

Effective mode: Real time



|          |   |            |           |
|----------|---|------------|-----------|
| Min.:    | 0 | Unit:      | -         |
| Max.:    | 1 | Data Type: | UInt16    |
| Default: | 0 | Change:    | Real-time |

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.49 VDO9 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-32h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 33       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.33.

**Description**

-

**H17.50 VDO9 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-33h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.51 VDO10 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-34h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 33       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.33.

**Description**

-

**H17.52 VDO10 logic level selection**

Hex: 2017-35h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.53 VDO11 function**

Hex: 2017-36h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 33

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

See H17.33.

**Description**

-

**H17.54 VDO11 logic level selection**

Hex: 2017-37h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.55 VDO12 function**

Hex: 2017-38h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 33

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

See H17.33.

**Description**

-

**H17.56 VDO12 logic level selection**

Hex: 2017-39h

Effective Real time  
mode:

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.57 VDO13 function**

Hex: 2017-3Ah

Effective Real time  
mode:

Min.: 0

Unit: -

Max.: 33

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

See H17.33.

**Description**

-

**H17.58 VDO13 logic level selection**

Hex: 2017-3Bh

Effective Real time  
mode:

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.59 VDO14 function**

Hex: 2017-3Ch

Effective Real time  
mode:

|          |    |            |           |
|----------|----|------------|-----------|
| Min.:    | 0  | Unit:      | -         |
| Max.:    | 33 | Data Type: | UInt16    |
| Default: | 0  | Change:    | Real-time |

**Value Range:**

See H17.33.

**Description**

-

**H17.60 VDO14 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-3Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.61 VDO15 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-3Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 33       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.33.

**Description**

-

**H17.62 VDO15 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-3Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.63****VDO16 function**

Hex: 2017-40h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 33

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

See H17.33.

**Description**

-

**H17.64****VDO16 logic level selection**

Hex: 2017-41h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

## 2.21 H18 Position Comparison Output

**H18.00****Position comparison output selection**

Hex: 2018-01h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Disable

1: Enable (rising edge-triggered)

**Description**

-

**H18.01****Position comparison output feedback source**

Hex: 2018-02h

Effective mode: Upon the next power-on

|          |   |            |           |
|----------|---|------------|-----------|
| Min.:    | 0 | Unit:      | -         |
| Max.:    | 1 | Data Type: | UInt16    |
| Default: | 0 | Change:    | Real-time |

**Value Range:**

0: Motor encoder feedback

1: Fully closed-loop position feedback

**Description**

-

**H18.02 Position comparison resolution**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2018-03h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 7        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

0: 24-bit

1: 23-bit

2: 22-bit

3: 21-bit

4: 20-bit

5: 19-bit

6: 18-bit

7: 17-bit

**Description**

-

**H18.03 Position comparison mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2018-04h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Individual comparison mode

1: Cyclic comparison mode

2: Fixed cyclic comparison mode

**Description**

-

#### H18.04 Current position as zero

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2018-05h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

##### Value Range:

0: Disable

1: Enable (rising edge-triggered)

##### Description

-

#### H18.05 Position comparison output width

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2018-06h | Effective mode: | Real time |
| Min.:    | 0.1      | Unit:           | ms        |
| Max.:    | 204.7    | Data Type:      | UInt16    |
| Default: | 0.1      | Change:         | Real-time |

##### Value Range:

0.1 ms to 204.7 ms

##### Description

Defines the active pulse width of the DO when the comparison point is reached.  
The value range is 0 to 204.7 (unit: 1 ms).

#### H18.06 Position comparison output ABZ port polarity

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2018-07h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

##### Value Range:

| bit | Name             | Description                                      |
|-----|------------------|--------------------------------------------------|
| 0   | OCZ output logic | 0: Positive, output high level upon active logic |
|     |                  | 1: Negative, output low level upon active logic  |
| 1   | Z output logic   | 0: Positive, output high level upon active logic |
|     |                  | 1: Negative, output low level upon active logic  |
| 2   | A/B output logic | 0: Positive, output high level upon active logic |
|     |                  | 1: Negative, output low level upon active logic  |

**Description**

0: Positive (output high level upon active logic) 1: Negative (output high level upon active logic)

bit0: OCZ output logic

Bit1: Z output logic

Bit2: A/B output logic

**H18.07 Position comparison start point**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2018-08h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 40       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–40

**Description**

-

**H18.08 Position comparison end point**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2018-09h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 40       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–40

**Description**

-

**H18.09 Current state of position comparison**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2018-0Ah | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 1024     | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–1024

**Description**

-



**H18.10 Real-time position of position comparison**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 2018-0Bh    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | -2147483648 | Unit:      | -            |
| Max.:    | 2147483647  | Data Type: | Int32        |
| Default: | 0           | Change:    | Unchangeable |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H18.12 Zero offset of position comparison**

|          |             |            |           |
|----------|-------------|------------|-----------|
| Hex:     | 2018-0Dh    | Effective  | Real time |
|          |             | mode:      |           |
| Min.:    | -2147483648 | Unit:      | -         |
| Max.:    | 2147483647  | Data Type: | Int32     |
| Default: | 0           | Change:    | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H18.14 Position comparison output delay compensation**

|          |          |            |                        |
|----------|----------|------------|------------------------|
| Hex:     | 2018-0Fh | Effective  | Upon the next power-on |
|          |          | mode:      |                        |
| Min.:    | -12.00   | Unit:      | us                     |
| Max.:    | 12.00    | Data Type: | Int16                  |
| Default: | 0.00     | Change:    | Real-time              |

**Value Range:**

-12.00us to 12.00us

**Description**

Compensates the delay caused by hardware signal output.

**H18.15 Fixed cyclic comparison**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2018-10h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 1        | Unit:      | -         |
| Max.:    | 65535    | Data Type: | UInt16    |
| Default: | 1        | Change:    | Real-time |

**Value Range:**

1–65535

**Description**

-

**H18.16 ABZ output function setting**

Hex: 2018-11h Effective mode: Real time  
 Unit: -  
 Min.: 0  
 Max.: 65535 Data Type: UInt16  
 Default: 0 Change: Real-time

**Value Range:**

| bit | Name                     | Description                  |
|-----|--------------------------|------------------------------|
| 0   | OCZ output function      | 0: Frequency-division output |
|     |                          | 1: Position comparison       |
| 1   | Z port output function   | 0: Frequency-division output |
|     |                          | 1: Position comparison       |
| 2   | A/B port output function | 0: Frequency-division output |
|     |                          | 1: Position comparison       |

**Description**

0: Frequency-division output 1: Position comparison

bit0: OCZ port function setting

Bit 1: Z port function setting

Bit 2: A/B function setting

**H18.17 Number of fixed mode cycles**

Hex: 2018-12h Effective mode: -  
 Unit: -  
 Min.: 0  
 Max.: 65535 Data Type: UInt16  
 Default: 0 Change: Unchangeable

**Value Range:**

0–65535

**Description**

-

## 2.22 H19 Target Position Parameters

### H19.00 Target value of position comparison 1

Hex: 2019-01h Effective mode: Real time  
 mode:  
 Min.: -2147483648 Unit: -  
 Max.: 2147483647 Data Type: Int32  
 Default: 0 Change: Real-time

#### Value Range:

-2147483648–2147483647

#### Description

-

### H19.02 Attribute value of position comparison 1

Hex: 2019-03h Effective mode: Real time  
 mode:  
 Min.: 0 Unit: -  
 Max.: 65535 Data Type: UInt16  
 Default: 0 Change: Real-time

#### Value Range:

| bit | Description                                                                                              |
|-----|----------------------------------------------------------------------------------------------------------|
| 0   | Output DO active signal if current position changes from "less than" to "more than" the comparison point |
| 1   | Output DO active signal if current position changes from "more than" to "less than" the comparison point |
| 2–6 | Reserved                                                                                                 |
| 7   | DO1 output                                                                                               |
| 8   | DO2 output                                                                                               |
| 9   | DO3 output                                                                                               |
| 10  | DO4 output                                                                                               |
| 11  | DO5 output                                                                                               |
| 12  | Frequency-division A output                                                                              |
| 13  | Frequency-division B output                                                                              |
| 14  | Frequency-division Z output                                                                              |
| 15  | Frequency-division OCZ output                                                                            |

#### Description

Attribute setting of position comparison point 1

**H19.03 Target value of position comparison 2**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-04h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.05 Attribute value of position comparison 2**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-06h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.06 Target value of position comparison 3**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-07h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.08 Attribute value of position comparison 3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-09h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.09 Target value of position comparison 4**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-0Ah    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.11 Attribute value of position comparison 4**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-0Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.12 Target value of position comparison 5**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-0Dh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.14 Attribute value of position comparison 5**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2019-0Fh | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 65535    | Data Type:      | UInt16    |

Change: Real-time

See H19.02.

See H19.02.

See H19.02.

See H19.02.

|                        |             |                 |           |
|------------------------|-------------|-----------------|-----------|
| Hex:                   | 2019-10h    | Effective mode: | Real time |
| Min.:                  | -2147483648 | Unit:           | -         |
| Max.:                  | 2147483647  | Data Type:      | Int32     |
| Default:               | 0           | Change:         | Real-time |
| <b>Value Range:</b>    |             |                 |           |
| -2147483648–2147483647 |             |                 |           |
| <b>Description</b>     |             |                 |           |
| -                      |             |                 |           |

Hex: 2019-10h

Effective mode: Real time

Min.: -2147483648

Unit: -

Max.: 2147483647

Data Type: Int32

Default: 0

Change: Real-time

**Value Range:**

-2147483648-2147483647

### Description

—

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2019-12h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| See H19.02.         |          |                 |           |
| <b>Description</b>  |          |                 |           |
| See H19.02.         |          |                 |           |

Hex: 2019-12h

|           |           |
|-----------|-----------|
| Effective | Real time |
| mode:     |           |

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

See H19.02.

### Description

See H19.02.

|                        |             |                 |           |
|------------------------|-------------|-----------------|-----------|
| Hex:                   | 2019-13h    | Effective mode: | Real time |
| Min.:                  | -2147483648 | Unit:           | -         |
| Max.:                  | 2147483647  | Data Type:      | Int32     |
| Default:               | 0           | Change:         | Real-time |
| <b>Value Range:</b>    |             |                 |           |
| -2147483648–2147483647 |             |                 |           |
| <b>Description</b>     |             |                 |           |
| -                      |             |                 |           |

Hex: 2019-13h

Effective      Real time  
mode:

Min.: -2147483648

Unit: -

Max.: 2147483647

Data Type: Int32

Default: 0

Change: Real-time

**Value Range:**

-2147483648-2147483647

### Description

—

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2019-15h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

Hex: 2019-15h

Effective      Real time  
mode:

|          |       |            |           |
|----------|-------|------------|-----------|
| Min.:    | 0     | Unit:      | -         |
| Max.:    | 65535 | Data Type: | UInt16    |
| Default: | 0     | Change:    | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.21 Target value of position comparison 8**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-16h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.23 Attribute value of position comparison 8**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-18h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.24 Target value of position comparison 9**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-19h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.26 Attribute value of position comparison 9**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-1Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.27 Target value of position comparison 10**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-1Ch    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.29 Attribute value of position comparison 10**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-1Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.30 Target value of position comparison 11**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-1Fh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647



**Description**

-

**H19.32 Attribute value of position comparison 11**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-21h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.33 Target value of position comparison 12**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-22h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.35 Attribute value of position comparison 12**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-24h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.36 Target value of position comparison 13**

|       |             |                 |           |
|-------|-------------|-----------------|-----------|
| Hex:  | 2019-25h    | Effective mode: | Real time |
| Min.: | -2147483648 | Unit:           | -         |
| Max.: | 2147483647  | Data Type:      | Int32     |

Change: Real-time

**Value Range:**

-2147483648-2147483647

### Description

—

**H19.38**      **Attribute value of position comparison 13**

Effective      Real time

mode:

Unit: -

Data Type: UInt16

Change: Real-time

**Value Range:**

See H19.02.

### Description

See H19.02.

**H19.39 Target value of position comparison 14**

Effective      Real time

mode:

Unit: -

Data Type: Int32

Change: Real-time

**Value Range:**

-2147483648-2147483647

### Description

**H19.41**      **Attribute value of position comparison 14**

Effective      Real time

mode:

Unit: -

Data Type: UInt16

Change: Real-time

**Value Range:**

See H19.02.

### Description

See H19.02.

#### H19.42 Target value of position comparison 15

Effective Real time

mode:

|          |             |            |           |
|----------|-------------|------------|-----------|
| Min.:    | -2147483648 | Unit:      | -         |
| Max.:    | 2147483647  | Data Type: | Int32     |
| Default: | 0           | Change:    | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.44 Attribute value of position comparison 15**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-2Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.45 Target value of position comparison 16**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-2Eh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.47 Attribute value of position comparison 16**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-30h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.48 Target value of position comparison 17**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-31h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.50 Attribute value of position comparison 17**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-33h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.51 Target value of position comparison 18**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-34h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.53 Attribute value of position comparison 18**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-36h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.54 Target value of position comparison 19**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-37h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.56 Attribute value of position comparison 19**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-39h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.57 Target value of position comparison 20**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-3Ah    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.59 Attribute value of position comparison 20**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2019-3Ch | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 65535    | Data Type:      | UInt16    |

Change: Real-time

See H19.02.

### Description

See H19.02.

See H19.02.

**H19.60 Target value of position comparison 21**

Effective      Real time

mode:

Unit: -

Data Type: Int32

Change: Real-time

-2147483648-2147483647

-2147483648-2147483647

—

**H19.62**      **Attribute value of position comparison 21**

Effective      Real time

mode:

Unit: -

Data Type: UInt16

Change: Real-time

See H19.02.

See H19.02.

See H19.02.

See H19.02.

### H19.63 Target value of position comparison 22

Effective      Real time

mode:

Unit: -

Data Type: Int32

Change: Real-time

-2147483648-2147483647

-2147483648-2147483647

—

**H19.65**      **Attribute value of position comparison 22**

Effective Real time

mode:

|          |       |            |           |
|----------|-------|------------|-----------|
| Min.:    | 0     | Unit:      | -         |
| Max.:    | 65535 | Data Type: | UInt16    |
| Default: | 0     | Change:    | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.66 Target value of position comparison 23**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-43h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.68 Attribute value of position comparison 23**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-45h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.69 Target value of position comparison 24**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-46h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.71 Attribute value of position comparison 24**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-48h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.72 Target value of position comparison 25**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-49h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.74 Attribute value of position comparison 25**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-4Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.75 Target value of position comparison 26**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-4Ch    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647



**Description**

-

**H19.77 Attribute value of position comparison 26**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-4Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.78 Target value of position comparison 27**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-4Fh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.80 Attribute value of position comparison 27**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-51h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.81 Target value of position comparison 28**

|       |             |                 |           |
|-------|-------------|-----------------|-----------|
| Hex:  | 2019-52h    | Effective mode: | Real time |
| Min.: | -2147483648 | Unit:           | -         |
| Max.: | 2147483647  | Data Type:      | Int32     |

Change: Real-time

-2147483648-2147483647

—

|      |          |           |           |
|------|----------|-----------|-----------|
| Hex: | 2019-54h | Effective | Real time |
|------|----------|-----------|-----------|

Effective      Real time

Unit: -

Unit: -

Data Type: UInt16

Change: Real-time

See H19.02.

See H19.02.

|      |          |           |           |
|------|----------|-----------|-----------|
| Hex: | 2019-55h | Effective | Real time |
|------|----------|-----------|-----------|

Effective      Real time

Unit: -

Unit: -

Data Type: Int32

Change: Real-time

-2147483648-2147483647

—

## Hex: 2019-57h Effective Real time

Effective      Real time

Unit: -

Unit: -

Data Type: UInt16

Change: Real-time

See H19.02.

See H19.02.

| Hex: | 2019-58h | Effective | Real time |
|------|----------|-----------|-----------|
|------|----------|-----------|-----------|

Effective      Real time

mode:

|          |             |            |           |
|----------|-------------|------------|-----------|
| Min.:    | -2147483648 | Unit:      | -         |
| Max.:    | 2147483647  | Data Type: | Int32     |
| Default: | 0           | Change:    | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.89      Attribute value of position comparison 30**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-5Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.90      Target value of position comparison 31**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-5Bh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.92      Attribute value of position comparison 31**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-5Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.93 Target value of position comparison 32**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-5Eh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.95 Attribute value of position comparison 32**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-60h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.96 Target value of position comparison 33**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-61h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.98 Attribute value of position comparison 33**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-63h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.99 Target value of position comparison 34**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-64h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.101 Attribute value of position comparison 34**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-66h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.102 Target value of position comparison 35**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-67h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.104 Attribute value of position comparison 35**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2019-69h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 65535    | Data Type:      | UInt16    |

Change: Real-time

See H19.02.

### Description

### Description

See H19.02.

### H19.105 Target value of position comparison 36

Effective      Real time

mode:

Unit: -

Data Type: Int32

Change: Real-time

**Value Range:**

-2147483648-2147483647

### Description

—

### H19.107 Attribute value of position comparison 36

Effective      Real time

mode:

Unit: -

Data Type: UInt16

Change: Real-time

**Value Range:**

See H19.02.

### Description

See H19.02.

### H19.108 Target value of position comparison 37

Effective      Real time

mode:

Unit: -

Data Type: Int32

Change: Real-time

**Value Range:**

-2147483648-2147483647

### Description

—

**H19.110**    **Attribute value of position comparison 37**

Effective      Real time

mode:

|          |       |            |           |
|----------|-------|------------|-----------|
| Min.:    | 0     | Unit:      | -         |
| Max.:    | 65535 | Data Type: | UInt16    |
| Default: | 0     | Change:    | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.111 Target value of position comparison 38**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-70h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.113 Attribute value of position comparison 38**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-72h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.114 Target value of position comparison 39**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-73h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.116 Attribute value of position comparison 39**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-75h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.117 Target value of position comparison 40**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-76h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.119 Attribute value of position comparison 40**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-78h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**2.23 H1F Software Parameters****H1F.90 DI function state 1 read through communication**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 201F-5Bh | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |



**Value Range:**

0–65535

**Description**

Bit 0 corresponds to DI function 1.

Bit 1 corresponds to DI function 2.

Bit 2 corresponds to DI function 3.

...

By analogy

**H1F.91      DI function state 2 read through communication**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 201F-5Ch | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Bit 0 corresponds to DI function 17.

Bit 1 corresponds to DI function 18.

Bit 2 corresponds to DI function 19.

...

By analogy

**H1F.92      DI function state 3 read through communication**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 201F-5Dh | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Bit 0 corresponds to DI function 33.

Bit 1 corresponds to DI function 34.

Bit 2 corresponds to DI function 35.

...

By analogy

**H1F.93 DI function state 4 read through communication**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 201F-5Eh | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

Bit 0 corresponds to DI function 49.

Bit 1 corresponds to DI function 50.

Bit 2 corresponds to DI function 51.

...

By analogy

**H1F.94 DO function state 1 read through communication**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 201F-5Fh | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

Bit 0 corresponds to DO function 1.

Bit 1 corresponds to DO function 2.

Bit 2 corresponds to DO function 3.

...

By analogy

**H1F.95 DO function state 2 read through communication**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 201F-60h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

Bit 0 corresponds to DO function 17.

Bit 1 corresponds to DO function 18.

Bit 2 corresponds to DO function 19.

...

By analogy

2.24 H21 Current Loop Gain Switchover Parameters

|                                                                      |                              |          |                           |
|----------------------------------------------------------------------|------------------------------|----------|---------------------------|
| H21.00                                                               | Current loop gain switchover |          |                           |
|                                                                      | Hex:                         | 2021-01h | Effective mode: Real time |
|                                                                      | Min.:                        | 0        | Unit: -                   |
|                                                                      | Max.:                        | 1        | Data Type: UInt16         |
|                                                                      | Default:                     | 0        | Change: Real-time         |
| Value Range:                                                         |                              |          |                           |
| 0: No operation                                                      |                              |          |                           |
| 1: Enabled                                                           |                              |          |                           |
| Description                                                          |                              |          |                           |
| Used to enable or disable the current loop gain switchover function. |                              |          |                           |
| 0: No operation, turned off                                          |                              |          |                           |
| 1: Enabled, turned on                                                |                              |          |                           |

2.25 H22 Technology Segment Parameters

|                                                                                                                |                                 |          |                           |
|----------------------------------------------------------------------------------------------------------------|---------------------------------|----------|---------------------------|
| H22.00                                                                                                         | Process segment command trigger |          |                           |
|                                                                                                                | Hex:                            | 2022-01h | Effective mode: Real time |
|                                                                                                                | Min.:                           | 0        | Unit: -                   |
|                                                                                                                | Max.:                           | 1000     | Data Type: UInt16         |
|                                                                                                                | Default:                        | 0        | Change: Real-time         |
| Value Range:                                                                                                   |                                 |          |                           |
| 0–1000                                                                                                         |                                 |          |                           |
| Description                                                                                                    |                                 |          |                           |
| Used to trigger the process segment. The process segment can be triggered through the keypad or communication. |                                 |          |                           |
| The homing function is triggered when 0 is written to H22.00.                                                  |                                 |          |                           |
| Process segments 1 to 15 are triggered when 1 to 15 are written to H22.00.                                     |                                 |          |                           |
| The process segment pauses when 1000 is written to H22.00.                                                     |                                 |          |                           |
| E126.0 (Process segment number error) will be reported when 16 to 999 are written to H22.00.                   |                                 |          |                           |

**H22.01 Process segment triggered by the event rising edge**

Hex: 2022-02h Effective mode: Real time  
 mode:  
 Min.: 0 Unit: -  
 Max.: 65535 Data Type: UInt16  
 Default: 0 Change: Real-time

**Value Range:**

0–65535

**Description**

DI: ProceEvTri (OFF to ON, rising edge-triggered).

| bit   | Value | Description                                                                        |
|-------|-------|------------------------------------------------------------------------------------|
| 0–3   | 0     | Trigger DI: The motor does not act upon rising edge of ProceEvTri1.                |
|       | 1–15  | Trigger DI: Process segments 1 to 15 are executed upon rising edge of ProceEvTri1. |
| 4–7   | 0     | Trigger DI: The motor does not act upon rising edge of ProceEvTri2.                |
|       | 1–15  | Trigger DI: Process segments 1 to 15 are executed upon rising edge of ProceEvTri2. |
| 8–11  | 0     | Trigger DI: The motor does not act upon rising edge of ProceEvTri3.                |
|       | 1–15  | Trigger DI: Process segments 1 to 15 are executed upon rising edge of ProceEvTri3. |
| 12–15 | 0     | Trigger DI: The motor does not act upon rising edge of ProceEvTri4.                |
|       | 1–15  | Trigger DI: Process segments 1 to 15 are executed upon rising edge of ProceEvTri4. |

**H22.02 Process segment triggered by the event falling edge**

Hex: 2022-03h Effective mode: Real time  
 mode:  
 Min.: 0 Unit: -  
 Max.: 65535 Data Type: UInt16  
 Default: 0 Change: Real-time

**Value Range:**

0–65535

**Description**

DI: ProceEvTri (ON to OFF, falling edge-triggered).

| bit   | Value | Description                                                                         |
|-------|-------|-------------------------------------------------------------------------------------|
| 0–3   | 0     | Trigger DI: The motor does not act upon falling edge of ProceEvTri1.                |
|       | 1–15  | Trigger DI: Process segments 1 to 15 are executed upon falling edge of ProceEvTri1. |
| 4–7   | 0     | Trigger DI: The motor does not act upon falling edge of ProceEvTri2.                |
|       | 1–15  | Trigger DI: Process segments 1 to 15 are executed upon falling edge of ProceEvTri2. |
| 8–11  | 0     | Trigger DI: The motor does not act upon falling edge of ProceEvTri3.                |
|       | 1–15  | Trigger DI: Process segments 1 to 15 are executed upon falling edge of ProceEvTri3. |
| 12–15 | 0     | Trigger DI: The motor does not act upon falling edge of ProceEvTri4.                |
|       | 1–15  | Trigger DI: Process segments 1 to 15 are executed upon falling edge of ProceEvTri4. |

## H22.03 Acceleration/Deceleration time upon technology segment pause

Hex: 2022-04h      Effective      Real time  
mode:  
Min.: 0      Unit: -  
Max.: 7      Data Type: UInt16  
Default: 0      Change: Real-time

### Value Range:

0: Acceleration/Deceleration time  
1: Acceleration/Deceleration time 1  
2: Acceleration/Deceleration time 2  
3: Acceleration/Deceleration time 3  
4: Acceleration/Deceleration time 4  
5: Acceleration/Deceleration time 5  
6: Acceleration/Deceleration time 6  
7: Acceleration/Deceleration time 7

### Description

When the process segment is paused, the motor ramps to stop based on the deceleration time defined by H22.03. Setpoints 0 to 7 correspond to parameters H22.35 to H22.42.

**H22.04 Positive software position limit**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2022-05h    | Effective mode: | Real time      |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | 2147483647  | Change:         | Real-time      |

**Value Range:**

-2147483648 to 2147483647

**Description**

E956.0 can occur when the motor operates forwardly with position reference exceeding the setpoint of H22.04 during positioning in the process segment mode.

**H22.06 Negative software position limit**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2022-07h    | Effective mode: | Real time      |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | -2147483648 | Change:         | Real-time      |

**Value Range:**

-2147483648 to 2147483647

**Description**

E958.0 can occur when the motor operates reversely with position reference exceeding the setpoint of H22.06 during positioning in the process segment mode.

**H22.08 Process segment number**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-09h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Indicates the process segment number in progress in the process segment mode.

**H22.09 Process segment function switch**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2022-0Ah | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |

|          |       |            |         |
|----------|-------|------------|---------|
| Max.:    | 65535 | Data Type: | UInt16  |
| Default: | 0     | Change:    | At stop |

**Value Range:**

0–65535

**Description**

Bit0:

0: Keep interrupt positioning state

1: Exit interrupt positioning state when triggering technology segment

**H22.10 Process segment state**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-0Bh | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Used for process segment state feedback.

The process segment number will be read back when commands in the positioning mode are not done executing.

The process segment number + 10000 will be read back when commands in the positioning mode are done executing.

The process segment number + 20000 will be read back when commands in the positioning mode are done executing and positioning has been completed.

**H22.19 Target speed**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-14h | Effective mode: | Real time    |
| Min.:    | 0.1      | Unit:           | [mm/s]/[rpm] |
| Max.:    | 6000.0   | Data Type:      | UInt16       |
| Default: | 50.0     | Change:         | Real-time    |

**Value Range:**

0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm]

**Description**

Eight groups of target speed are available for each process segment command.

Target speed refers to the constant operating speed when the motor is not in the acceleration/deceleration process. If the displacement is too small in the positioning mode, the actual motor speed will be lower than the setpoint of H22.19.

**H22.20****Target speed 1**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-15h | Effective mode: | Real time    |
| Min.:    | 0.1      | Unit:           | [mm/s]/[rpm] |
| Max.:    | 6000.0   | Data Type:      | UInt16       |
| Default: | 200.0    | Change:         | Real-time    |

**Value Range:**

0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm]

**Description**

See H22.19.

**H22.21****Target speed 2**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-16h | Effective mode: | Real time    |
| Min.:    | 0.1      | Unit:           | [mm/s]/[rpm] |
| Max.:    | 6000.0   | Data Type:      | UInt16       |
| Default: | 500.0    | Change:         | Real-time    |

**Value Range:**

0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm]

**Description**

See H22.19.

**H22.22****Target speed 3**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-17h | Effective mode: | Real time    |
| Min.:    | 0.1      | Unit:           | [mm/s]/[rpm] |
| Max.:    | 6000.0   | Data Type:      | UInt16       |
| Default: | 1000.0   | Change:         | Real-time    |

**Value Range:**

0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm]

**Description**

See H22.19.

**H22.23****Target speed 4**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-18h | Effective mode: | Real time    |
| Min.:    | 0.1      | Unit:           | [mm/s]/[rpm] |
| Max.:    | 6000.0   | Data Type:      | UInt16       |
| Default: | 1500.0   | Change:         | Real-time    |

**Value Range:**

0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm]



**Description**

See H22.19.

**H22.24 Target speed 5**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-19h | Effective mode: | Real time    |
| Min.:    | 0.1      | Unit:           | [mm/s]/[rpm] |
| Max.:    | 6000.0   | Data Type:      | UInt16       |
| Default: | 2000.0   | Change:         | Real-time    |

**Value Range:**

0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm]

**Description**

See H22.19.

**H22.25 Target speed 6**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-1Ah | Effective mode: | Real time    |
| Min.:    | 0.1      | Unit:           | [mm/s]/[rpm] |
| Max.:    | 6000.0   | Data Type:      | UInt16       |
| Default: | 2500.0   | Change:         | Real-time    |

**Value Range:**

0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm]

**Description**

See H22.19.

**H22.26 Target speed 7**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-1Bh | Effective mode: | Real time    |
| Min.:    | 0.1      | Unit:           | [mm/s]/[rpm] |
| Max.:    | 6000.0   | Data Type:      | UInt16       |
| Default: | 3000.0   | Change:         | Real-time    |

**Value Range:**

0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm]

**Description**

See H22.19.

**H22.35 Accel/Decel time**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2022-24h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | ms        |
| Max.: | 65535    | Data Type:      | UInt16    |

Default: 50

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

Eight groups of acceleration/deceleration time are available for each process segment command.

Acceleration/Deceleration time refers to the time for the motor to change from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm] at a constant speed.

**H22.36 Acceleration/Deceleration time 1**

Hex: 2022-25h

Effective mode: Real time

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 200

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

See H22.35.

**H22.37 Acceleration/Deceleration time 2**

Hex: 2022-26h

Effective mode: Real time

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 500

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

See H22.35.

**H22.38 Acceleration/Deceleration time 3**

Hex: 2022-27h

Effective mode: Real time

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 1000

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

See H22.35.

|                     |                                         |                 |           |
|---------------------|-----------------------------------------|-----------------|-----------|
| <b>H22.39</b>       | <b>Acceleration/Deceleration time 4</b> |                 |           |
| Hex:                | 2022-28h                                | Effective mode: | Real time |
| Min.:               | 0                                       | Unit:           | ms        |
| Max.:               | 65535                                   | Data Type:      | UInt16    |
| Default:            | 1500                                    | Change:         | Real-time |
| <b>Value Range:</b> |                                         |                 |           |
| 0 ms to 65535 ms    |                                         |                 |           |
| <b>Description</b>  |                                         |                 |           |
| See H22.35.         |                                         |                 |           |

|                     |                                         |                 |           |
|---------------------|-----------------------------------------|-----------------|-----------|
| <b>H22.40</b>       | <b>Acceleration/Deceleration time 5</b> |                 |           |
| Hex:                | 2022-29h                                | Effective mode: | Real time |
| Min.:               | 0                                       | Unit:           | ms        |
| Max.:               | 65535                                   | Data Type:      | UInt16    |
| Default:            | 2000                                    | Change:         | Real-time |
| <b>Value Range:</b> |                                         |                 |           |
| 0 ms to 65535 ms    |                                         |                 |           |
| <b>Description</b>  |                                         |                 |           |
| See H22.35.         |                                         |                 |           |

|                     |                                         |                 |           |
|---------------------|-----------------------------------------|-----------------|-----------|
| <b>H22.41</b>       | <b>Acceleration/Deceleration time 6</b> |                 |           |
| Hex:                | 2022-2Ah                                | Effective mode: | Real time |
| Min.:               | 0                                       | Unit:           | ms        |
| Max.:               | 65535                                   | Data Type:      | UInt16    |
| Default:            | 2500                                    | Change:         | Real-time |
| <b>Value Range:</b> |                                         |                 |           |
| 0 ms to 65535 ms    |                                         |                 |           |
| <b>Description</b>  |                                         |                 |           |
| See H22.35.         |                                         |                 |           |

|                     |                                         |                 |           |
|---------------------|-----------------------------------------|-----------------|-----------|
| <b>H22.42</b>       | <b>Acceleration/Deceleration time 7</b> |                 |           |
| Hex:                | 2022-2Bh                                | Effective mode: | Real time |
| Min.:               | 0                                       | Unit:           | ms        |
| Max.:               | 65535                                   | Data Type:      | UInt16    |
| Default:            | 3000                                    | Change:         | Real-time |
| <b>Value Range:</b> |                                         |                 |           |
| 0 ms to 65535 ms    |                                         |                 |           |

**Description**

See H22.35.

**H22.51 Delay after completion of the process segment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-34h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Eight groups of delay time are available for each process segment command.

The delay time refers to the delay that starts from the end of current command to the operation of the next command in the process segment. For details, see the Function Guide.

**H22.52 Delay time 1 after completion of the process segment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-35h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 50       | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

See H22.51.

**H22.53 Delay time 2 after completion of the process segment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-36h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 200      | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

See H22.51.

**H22.54 Delay time 3 after completion of the process segment**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2022-37h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |       |            |           |
|----------|-------|------------|-----------|
| Min.:    | 0     | Unit:      | ms        |
| Max.:    | 65535 | Data Type: | UInt16    |
| Default: | 500   | Change:    | Real-time |

**Value Range:**  
0 ms to 65535 ms

**Description**  
See H22.51.

**H22.55      Delay time 4 after completion of the process segment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-38h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 1000     | Change:         | Real-time |

**Value Range:**  
0 ms to 65535 ms

**Description**  
See H22.51.

**H22.56      Delay time 5 after completion of the process segment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-39h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 1500     | Change:         | Real-time |

**Value Range:**  
0 ms to 65535 ms

**Description**  
See H22.51.

**H22.57      Delay time 6 after completion of the process segment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-3Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 2000     | Change:         | Real-time |

**Value Range:**  
0 ms to 65535 ms

**Description**  
See H22.51.

**H22.58 Delay time 7 after completion of the process segment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-3Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 3000     | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

See H22.51.

**H22.70 Homing mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-47h | Effective mode: | Real time |
| Min.:    | -32768   | Unit:           | -         |
| Max.:    | 32767    | Data Type:      | Int16     |
| Default: | -2       | Change:         | Real-time |

**Value Range:**

-32768–32767

**Description**

Defines the default motor direction of rotation, deceleration point, and home during homing.

When H22.70 is set to a value from –2 to +35, 402 homing is used (6098h set to a value from –2 to +35). See section "Homing Function" in the Function Guide for details.

When H22.70 is set to a value lower than or equal to –200, local homing is used (H22.70 set to (–200 + H05.31)). See section "Homing Function" in the Function Guide for details.

**H22.71 Speed of high-speed search for home switch signal**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-48h | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 3000     | Data Type:      | UInt16       |
| Default: | 100      | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–3000[mm/s]/[rpm]

**Description**

Defines the motor speed for searching for the deceleration point signal during homing.

**H22.72 Speed of low-speed search for home switch signal**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-49h | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 1000     | Data Type:      | UInt16       |
| Default: | 10       | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–1000[mm/s]/[rpm]

**Description**

Defines the motor speed for searching for the home signal during homing.

**H22.73 Acceleration/Deceleration time during homing**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-4Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 1000     | Data Type:      | UInt16    |
| Default: | 1000     | Change:         | Real-time |

**Value Range:**

0 ms to 1000 ms

**Description**

Defines the time for the motor to accelerate from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm] at a constant speed during homing.

**H22.74 Home search time limit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-4Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10000    | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Defines the maximum homing time.

**H22.75 Mechanical home offset**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2022-4Ch    | Effective mode: | Real time      |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | 0           | Change:         | Real-time      |

**Value Range:**

-2147483648 to 2147483647

### Description

Defines the absolute position of the motor after homing.

## H22.79 Relative/Absolute homing

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-50h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

### Value Range:

0–65535

### Description

Defines the offset relationship between the mechanical home and mechanical zero point, and the action upon overtravel during homing.

When H22.79 is set to 0, the value of H05.40 is 2.

When H22.79 is set to 1, the value of H05.40 is 3.

## H22.83 Jump count threshold

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-54h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65534    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

### Value Range:

0–65534

### Description

Eight jump count thresholds are provided for each process segment command.

Jump count threshold: There are two jump process segments for the jump command. When the cumulative number of jumps executed by the jump command is lower than the jump count threshold, you will jump to process segment A, otherwise jump to process segment B. For details, see section 2.2.

## H22.84 Jump count threshold 1

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-55h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65534    | Data Type:      | UInt16    |
| Default: | 20       | Change:         | Real-time |

### Value Range:

0–65534



**Description**

See H22.83.

**H22.85      Jump count threshold 2**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-56h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65534    | Data Type:      | UInt16    |
| Default: | 40       | Change:         | Real-time |

**Value Range:**

0–65534

**Description**

See H22.83.

**H22.86      Jump count threshold 3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-57h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65534    | Data Type:      | UInt16    |
| Default: | 80       | Change:         | Real-time |

**Value Range:**

0–65534

**Description**

See H22.83.

**H22.87      Jump count threshold 4**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-58h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65534    | Data Type:      | UInt16    |
| Default: | 160      | Change:         | Real-time |

**Value Range:**

0–65534

**Description**

See H22.83.

**H22.88      Jump count threshold 5**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2022-59h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 65534    | Data Type:      | UInt16    |

Default: 320

Change: Real-time

**Value Range:**

0–65534

**Description**

See H22.83.

**H22.89 Jump count threshold 6**

Hex: 2022-5Ah

Effective mode: Real time

Min.: 0

Unit: -

Max.: 65534

Data Type: UInt16

Default: 640

Change: Real-time

**Value Range:**

0–65534

**Description**

See H22.83.

**H22.90 Jump count threshold 7**

Hex: 2022-5Bh

Effective mode: Real time

Min.: 0

Unit: -

Max.: 65534

Data Type: UInt16

Default: 1280

Change: Real-time

**Value Range:**

0–65534

**Description**

See H22.83.

## 2.26 H23 Technology Segment

**H23.00 Definition of homing**

Hex: 2023-01h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 4294967295

Data Type: UInt32

Default: 0

Change: Real-time

**Value Range:**

0–4294967295

**Description**

For details, see section “Homing Mode” in the Function Guide.

**H23.02****Homing data**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-03h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

Not used.

**H23.04****Definition of process segment 1**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-05h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

bit0 to bit3: Mode (process segment operation mode option)

Mode = 1: The fixed speed mode applies. Mode = 2: The positioning mode applies, which stops after positioning is done. Mode = 3: The next segment is executed automatically after positioning is done. Mode = 7: The jump mode applies, which is used to jump to the designated process segment. Mode = 8: The parameter-write mode applies, which allows you to write specific parameters.

For details on each mode, see the Function Guide.

**H23.06****Data of process segment 1**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-07h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

Different modes selected in process segment 1 correspond to different process segment data. For details on each mode, see the Function Guide.

**H23.08 Definition of process segment 2**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-09h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

See definition of technology segment 1.

**H23.10 Data of process segment 2**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-0Bh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

See that of technology segment 1.

**H23.12 Definition of process segment 3**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-0Dh   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

See definition of technology segment 1.

**H23.14 Data of process segment 3**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-0Fh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

See that of technology segment 1.

**H23.16 Definition of process segment 4**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-11h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

See definition of technology segment 1.

**H23.18 Data of process segment 4**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-13h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

See that of technology segment 1.

**H23.20 Definition of process segment 5**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-15h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

See definition of technology segment 1.

**H23.22 Data of process segment 5**

|       |             |                 |           |
|-------|-------------|-----------------|-----------|
| Hex:  | 2023-17h    | Effective mode: | Real time |
| Min.: | -2147483648 | Unit:           | -         |
| Max.: | 2147483647  | Data Type:      | Int32     |

Default: 0 Change: Real-time

**Value Range:**  
-2147483648–2147483647

**Description**  
See that of technology segment 1.

## H23.24 Definition of process segment 6

Hex: 2023-19h Effective mode: Real time

Min.: 0 Unit: -

Max.: 4294967295 Data Type: UInt32

Default: 0 Change: Real-time

**Value Range:**  
0–4294967295

**Description**  
See definition of technology segment 1.

## H23.26 Data of process segment 6

Hex: 2023-1Bh Effective mode: Real time

Min.: -2147483648 Unit: -

Max.: 2147483647 Data Type: Int32

Default: 0 Change: Real-time

**Value Range:**  
-2147483648–2147483647

**Description**  
See that of technology segment 1.

## H23.28 Definition of process segment 7

Hex: 2023-1Dh Effective mode: Real time

Min.: 0 Unit: -

Max.: 4294967295 Data Type: UInt32

Default: 0 Change: Real-time

**Value Range:**  
0–4294967295

**Description**  
See definition of technology segment 1.

**H23.30 Data of process segment 7**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-1Fh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

See that of technology segment 1.

**H23.32 Definition of process segment 8**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-21h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

See definition of technology segment 1.

**H23.34 Data of process segment 8**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-23h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

See that of technology segment 1.

**H23.36 Definition of process segment 9**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-25h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

See definition of technology segment 1.

**H23.38 Data of process segment 9**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-27h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

See that of technology segment 1.

**H23.40 Definition of process segment 10**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-29h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

See definition of technology segment 1.

**H23.42 Data of process segment 10**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-2Bh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

See that of technology segment 1.

**H23.44 Definition of process segment 11**

|       |            |                 |           |
|-------|------------|-----------------|-----------|
| Hex:  | 2023-2Dh   | Effective mode: | Real time |
| Min.: | 0          | Unit:           | -         |
| Max.: | 4294967295 | Data Type:      | UInt32    |



Change: Real-time

0-4294967295

See definition of technology segment 1.

## H23.46 Data of process segment 11

Effective      Real time

Unit: -

Data Type: Int32

Change: Real-time

-2147483648-2147483647

See that of technology segment 1.

## H23.48 Definition of process segment 12

Effective      Real time

Unit: -

Data Type: UInt32

Change: Real-time

0-4294967295

See definition of technology segment 1.

## H23.50 Data of process segment 12

Effective      Real time

Unit: -

Data Type: Int32

Change: Real-time

-2147483648-2147483647

See that of technology segment 1.

**H23.52 Definition of process segment 13**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-35h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

See definition of technology segment 1.

**H23.54 Data of process segment 13**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-37h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

See that of technology segment 1.

**H23.56 Definition of process segment 14**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-39h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

See definition of technology segment 1.

**H23.58 Data of process segment 14**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-3Bh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

### Description

See that of technology segment 1.

#### H23.60 Definition of process segment 15

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-3Dh   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

### Value Range:

0–4294967295

### Description

See definition of technology segment 1.

#### H23.62 Data of process segment 15

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-3Fh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

### Value Range:

-2147483648–2147483647

### Description

See that of technology segment 1.

## 2.27 H30 Related Variables Read through Communication

#### H30.00 Servo state read by communication

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2030-01h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

### Value Range:

0–65535

### Description

-

**H30.01 DO function state 1 read through communication**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2030-02h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

Bit 0 corresponds to DO function 1.

Bit 1 corresponds to DO function 2.

Bit 2 corresponds to DO function 3.

...

By analogy

**H30.02 DO function state 2 read through communication**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2030-03h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

Bit 0 corresponds to DO function 17.

Bit 1 corresponds to DO function 18.

Bit 2 corresponds to DO function 19.

...

By analogy

**H30.03 Input pulse reference sampling read via communication**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2030-04h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

|                                                                                                               |                                                |            |              |
|---------------------------------------------------------------------------------------------------------------|------------------------------------------------|------------|--------------|
| <b>H30.16</b>                                                                                                 | <b>1st encoder communication timeout count</b> |            |              |
| Hex:                                                                                                          | 2030-11h                                       | Effective  | N/A          |
|                                                                                                               |                                                | mode:      |              |
| Min.:                                                                                                         | 0                                              | Unit:      | -            |
| Max.:                                                                                                         | 65535                                          | Data Type: | UInt16       |
| Default:                                                                                                      | 0                                              | Change:    | Unchangeable |
| <b>Value Range:</b>                                                                                           |                                                |            |              |
| 0–65535                                                                                                       |                                                |            |              |
| <b>Description</b>                                                                                            |                                                |            |              |
| It indicates the total number of communication timeout errors of the first encoder after the latest power-on. |                                                |            |              |

|                                                                                                           |                                                  |            |              |
|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------|------------|--------------|
| <b>H30.17</b>                                                                                             | <b>1st encoder communication CRC error count</b> |            |              |
| Hex:                                                                                                      | 2030-12h                                         | Effective  | N/A          |
|                                                                                                           |                                                  | mode:      |              |
| Min.:                                                                                                     | 0                                                | Unit:      | -            |
| Max.:                                                                                                     | 65535                                            | Data Type: | UInt16       |
| Default:                                                                                                  | 0                                                | Change:    | Unchangeable |
| <b>Value Range:</b>                                                                                       |                                                  |            |              |
| 0–65535                                                                                                   |                                                  |            |              |
| <b>Description</b>                                                                                        |                                                  |            |              |
| It indicates the total number of communication CRC errors of the first encoder after the latest power-on. |                                                  |            |              |

|                                                                                                                |                                                             |            |              |
|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|------------|--------------|
| <b>H30.18</b>                                                                                                  | <b>1st encoder communication frame stop bit error count</b> |            |              |
| Hex:                                                                                                           | 2030-13h                                                    | Effective  | N/A          |
|                                                                                                                |                                                             | mode:      |              |
| Min.:                                                                                                          | 0                                                           | Unit:      | -            |
| Max.:                                                                                                          | 65535                                                       | Data Type: | UInt16       |
| Default:                                                                                                       | 0                                                           | Change:    | Unchangeable |
| <b>Value Range:</b>                                                                                            |                                                             |            |              |
| 0–65535                                                                                                        |                                                             |            |              |
| <b>Description</b>                                                                                             |                                                             |            |              |
| It indicates the total number of communication frame stop bit errors of the encoder after the latest power-on. |                                                             |            |              |

## 2.28 H31 Communication Setting

|               |                                                    |           |           |
|---------------|----------------------------------------------------|-----------|-----------|
| <b>H31.00</b> | <b>VDI virtual level set through communication</b> |           |           |
| Hex:          | 2031-01h                                           | Effective | Real time |
|               |                                                    | mode:     |           |

|          |       |            |           |
|----------|-------|------------|-----------|
| Min.:    | 0     | Unit:      | -         |
| Max.:    | 65535 | Data Type: | UInt16    |
| Default: | 0     | Change:    | Real-time |

**Value Range:**

0–65535

**Description**

When H17.90 is set to 1, the VDI state is defined by this parameter.

The VDI logic is determined by H17.91 (Default VDI virtual level value upon power-on) upon initial power-on. Then, H31.00 is determined by the VDI logic. "bit(n) = 1" of H31.00 indicates the logic of VDI (n+1) is "1". "bit(n)=0" indicates the logic of VDI (n+1) is "0".

**H31.01 Frequency-division output frequency set through communication**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2031-02h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | Hz        |
| Max.:    | 16000000 | Data Type:      | UInt32    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 Hz–16000000 Hz

**Description**

When H05.38 is set to 4, H31.01 sets the frequency of the frequency division output port.

**H31.04 DO state set through communication**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2031-05h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

Sets DO output status.

**H31.05 AO set through communication**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2031-06h | Effective mode: | Real time |
| Min.:    | -10000   | Unit:           | mV        |
| Max.:    | 10000    | Data Type:      | Int16     |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

-10000 mV–10000 mV

**Description**

Set H04.50 to 10 to define AO through H31.05 (in mV).

**H31.09 Speed reference set via communication**

|          |           |                 |              |
|----------|-----------|-----------------|--------------|
| Hex:     | 2031-0Ah  | Effective mode: | Real time    |
| Min.:    | -9999.000 | Unit:           | [mm/s]/[rpm] |
| Max.:    | 9999.000  | Data Type:      | Int32        |
| Default: | 0.000     | Change:         | Real-time    |

**Value Range:**

-9999.000[mm/s]/[rpm]–9999.000[mm/s]/[rpm]

**Description**

Set H06.02 to 4 to define the speed reference in the speed control mode (unit: 0.001 [mm/s]/[rpm]).

**H31.11 Torque reference set via communication**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2031-0Ch | Effective mode: | Real time |
| Min.:    | -100.000 | Unit:           | %         |
| Max.:    | 100.000  | Data Type:      | Int32     |
| Default: | 0.000    | Change:         | Real-time |

**Value Range:**

-100.000% to 100.000%

**Description**

Set H07.02 to 4 to define the torque reference in the torque control mode through this parameter (unit: 0.001%). The setpoint 100.000% corresponds to the rated torque of the motor.

## 2.29 H32 Direct Drive Parameters

**H32.00 Encoder interpolator mismatch alarm (E124)**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-01h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

0: Disabled

1: Enabled

**Description**

The T2 interpolator matches the HipeFace encoder. The power-on check switch is turned on by default.

**H32.01 Encoder interface switchover switch**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2032-02h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Default encoder interface

1: Switching encoder interface

**Description**

-

**H32.02 Angle auto-tuning upon power-on**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-03h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Angle auto-tuning starts after the drive switches to the rdy state and the time defined by H32.41 elapses.

**H32.03 Angle auto-tuning switch controlled by control word**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-04h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Disabled

1: Control word 6

2: Control word 7

**Description**

Used to enable the angle auto-tuning switchover switch through the control word.



**H32.04 Angle auto-tuning state**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2032-05h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 65535    | Data Type: | UInt16    |
| Default: | 0        | Change:    | At stop   |

**Value Range:**

bit0: bit7 of 6041

bit1: E602.9

**Description**

When the incremental encoder is not angle auto-tuned, it will raise an alarm or provide a status bit based on the setting. When bit0 and bit1 are both set, only bit0 is effective.

**H32.05 Pre-positioning retract selection**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2032-06h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 65535    | Data Type: | UInt16    |
| Default: | 0        | Change:    | At stop   |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Used to retract by a certain distance after auto-tuning through pre-positioning is done.

**H32.06 Position feedback**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2032-07h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 1        | Data Type: | UInt16    |
| Default: | 0        | Change:    | At stop   |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Used to align the position feedback to the position before angle auto-tuning for incremental encoders.

**H32.07 Incremental homing method**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-08h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 9        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

0: Z Signal short circuit

1: Only first short circuit

**Description**

Selects the Z signal for Z signal homing of an incremental communication encoder. Z signal width is set according to H32.08.

**H32.08 Homing signal width**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-09h | Effective mode: | Real time |
| Min.:    | 100      | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 800      | Change:         | At stop   |

**Value Range:**

100–65535

**Description**

The setpoint is active after the position is latched by Z signal.

**H32.10 Max. reference current in angle auto-tuning through inching**

|          |          |                 |         |
|----------|----------|-----------------|---------|
| Hex:     | 2032-0Bh | Effective mode: | At stop |
| Min.:    | 10.0     | Unit:           | %       |
| Max.:    | 300.0    | Data Type:      | UInt16  |
| Default: | 100.0    | Change:         | At stop |

**Value Range:**

10.0% to 300.0%

**Description**

Defines the maximum reference current during auto-tuning.

**H32.13 Motor operation threshold (ROT/DDR) in angle auto-tuning through inching**

|       |          |                 |         |
|-------|----------|-----------------|---------|
| Hex:  | 2032-0Eh | Effective mode: | At stop |
| Min.: | 0.001    | Unit:           | deg     |
| Max.: | 20.000   | Data Type:      | UInt16  |

Default: 0.200

Change: At stop

**Value Range:**

0.001deg to 20.000deg

**Description**

Sets motor operation threshold for position lock angle auto-tuning.

Usually no change is required. If you have special requirements for the operation range, you can adjust this parameter accordingly. The smaller the value, the smaller the operation range during auto-tuning, but the greater the auto-tuning error.

**H32.14 Motor standstill threshold (ROT/DDR) in angle auto-tuning through inching**

Hex: 2032-0Fh

Effective At stop

mode:

Min.: 0.1

Unit: [mm/s]/[rpm]

Max.: 100.0

Data Type: UInt16

Default: 1.0

Change: At stop

**Value Range:**

0.1[mm/s]/[rpm]–100.0[mm/s]/[rpm]

**Description**

Sets motor stop threshold for auto-tuning. Usually no change is required.

**H32.15 Motor operation threshold (DDL) in angle auto-tuning through inching**

Hex: 2032-10h

Effective At stop

mode:

Min.: 0.001

Unit: mm

Max.: 20.000

Data Type: UInt16

Default: 0.200

Change: At stop

**Value Range:**

0.001 millimeters–20.000 millimeters

**Description**

Sets motor operation threshold for position lock angle auto-tuning.

Usually no change is required. If you have special requirements for the operation range, you can adjust this parameter accordingly. The smaller the value, the smaller the operation range during auto-tuning, but the greater the auto-tuning error.

**H32.16 Motor standstill threshold (DDL) in angle auto-tuning through inching**

Hex: 2032-11h

Effective At stop

mode:

Min.: 0.1

Unit: mm/s

Max.: 100.0

Data Type: UInt16

Default: 1.0

Change: At stop

**Value Range:**

0.1 mm/s–100.0 mm/s

**Description**

Sets motor stop threshold for auto-tuning. Usually no change is required.

**H32.18 Motor standstill threshold for inching angle auto-tuning**

Hex: 2032-13h

Effective At stop  
mode:

Min.: 0.1

Unit: s

Max.: 10.0

Data Type: UInt16

Default: 0.5

Change: At stop

**Value Range:**

0.1s to 10.0s

**Description**

Sets motor standstill threshold for auto-tuning. Usually no change is required.

**H32.20 Max. reference current in angle auto-tuning through pre-positioning (closed-loop)**

Hex: 2032-15h

Effective At stop  
mode:

Min.: 10.0

Unit: %

Max.: 300.0

Data Type: UInt16

Default: 100.0

Change: At stop

**Value Range:**

10.0% to 300.0%

**Description**

Defines the maximum reference current during auto-tuning.

**H32.22 Electrical angle reference in angle auto-tuning through pre-positioning (closed-loop)**

Hex: 2032-17h

Effective At stop  
mode:

Min.: 0.0

Unit: deg

Max.: 360.0

Data Type: UInt16

Default: 0.0

Change: At stop

**Value Range:**

0.0deg to 360.0deg

**Description**

Defines the electrical angle during auto-tuning through pre-positioning.

**H32.23 Electrical angle reference change range in angle auto-tuning through pre-positioning (closed-loop)**

|          |          |                 |         |
|----------|----------|-----------------|---------|
| Hex:     | 2032-18h | Effective mode: | At stop |
| Min.:    | 10.0     | Unit:           | deg     |
| Max.:    | 170.0    | Data Type:      | UInt16  |
| Default: | 90.0     | Change:         | At stop |

**Value Range:**

10.0deg to 170.0deg

**Description**

Defines the electrical angle change range during auto-tuning.

**H32.24 Motor stop threshold (ROT/DDR) in angle auto-tuning through pre-positioning (closed-loop)**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2032-19h | Effective mode: | At stop      |
| Min.:    | 0.1      | Unit:           | [mm/s]/[rpm] |
| Max.:    | 100.0    | Data Type:      | UInt16       |
| Default: | 1.0      | Change:         | At stop      |

**Value Range:**

0.1[mm/s]/[rpm]–100.0[mm/s]/[rpm]

**Description**

Sets motor stop threshold for auto-tuning. Usually no change is required.

**H32.25 Motor stop threshold (DDL) in angle auto-tuning through pre-positioning (closed-loop)**

|          |          |                 |         |
|----------|----------|-----------------|---------|
| Hex:     | 2032-1Ah | Effective mode: | At stop |
| Min.:    | 0.1      | Unit:           | mm/s    |
| Max.:    | 100.0    | Data Type:      | UInt16  |
| Default: | 1.0      | Change:         | At stop |

**Value Range:**

0.1 mm/s–100.0 mm/s

**Description**

Sets motor stop threshold for auto-tuning. Usually no change is required.

**H32.26 Damping in angle auto-tuning through pre-positioning (closed-loop)**

|       |          |                 |                     |
|-------|----------|-----------------|---------------------|
| Hex:  | 2032-1Bh | Effective mode: | At stop             |
| Min.: | 0.00     | Unit:           | [N/(m/s)]/[N·m/rpm] |
| Max.: | 655.35   | Data Type:      | UInt16              |

Default: 0.00

Change: At stop

**Value Range:**

0.00[N/(m/s)]/[N·m/rpm]–655.35[N/(m/s)]/[N·m/rpm]

**Description**

Sets the damping coefficient for motor auto-tuning. The appropriate coefficient ensures a smooth and impact-free operation.

(1) This coefficient is usually related to the load characteristics. Larger load requires a larger coefficient.

(2) When the coefficient is too small, the auto-tuning process may be prone to strong impact, which is normal. When it is too large, motor operation may be sluggish or even stops, which is also normal and a timeout alarm will be raised.

**H32.29 Motor standstill threshold for close-loop pre-positioning angle auto-tuning**

Hex: 2032-1Eh

Effective At stop

mode:

Min.: 0.1

Unit: s

Max.: 10.0

Data Type: UInt16

Default: 0.5

Change: At stop

**Value Range:**

0.1s to 10.0s

**Description**

Sets motor standstill threshold for auto-tuning. Usually no change is required.

**H32.30 Max. reference current in angle auto-tuning through position lock**

Hex: 2032-1Fh

Effective At stop

mode:

Min.: 10.0

Unit: %

Max.: 300.0

Data Type: UInt16

Default: 100.0

Change: At stop

**Value Range:**

10.0% to 300.0%

**Description**

Defines the maximum reference current during auto-tuning.

**H32.33 Motor operation evaluation threshold for position locking auto-tuning (ROT/DDR)**

Hex: 2032-22h

Effective At stop

mode:

Min.: 0.001

Unit: deg

Max.: 20.000

Data Type: UInt16

Default: 0.200

Change: At stop

**Value Range:**

0.001deg to 20.000deg

**Description**

Sets motor operation threshold for position lock angle auto-tuning. Usually no change is required. If you have special requirements for the operation range, you can adjust this parameter accordingly. The smaller the value, the smaller the operation range during auto-tuning, but the greater the auto-tuning error.

**H32.34 Motor standstill threshold (ROT/DDR) in angle auto-tuning through position lock**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2032-23h | Effective  | At stop      |
|          |          | mode:      |              |
| Min.:    | 0.1      | Unit:      | [mm/s]/[rpm] |
| Max.:    | 100.0    | Data Type: | UInt16       |
| Default: | 1.0      | Change:    | At stop      |

**Value Range:**

0.1[mm/s]/[rpm]–100.0[mm/s]/[rpm]

**Description**

Sets motor stop threshold for auto-tuning. Usually no change is required.

**H32.35 Motor operation threshold (DDL) in angle auto-tuning through position lock**

|          |          |            |         |
|----------|----------|------------|---------|
| Hex:     | 2032-24h | Effective  | At stop |
|          |          | mode:      |         |
| Min.:    | 0.001    | Unit:      | mm      |
| Max.:    | 20.000   | Data Type: | UInt16  |
| Default: | 0.200    | Change:    | At stop |

**Value Range:**

0.001 millimeters–20.000 millimeters

**Description**

Sets motor operation threshold for position lock angle auto-tuning. Usually no change is required. If you have special requirements for the operation range, you can adjust this parameter accordingly. The smaller the value, the smaller the operation range during auto-tuning, but the greater the auto-tuning error.

**H32.36 Motor standstill threshold (DDL) in angle auto-tuning through position lock**

|       |          |           |         |
|-------|----------|-----------|---------|
| Hex:  | 2032-25h | Effective | At stop |
|       |          | mode:     |         |
| Min.: | 0.1      | Unit:     | mm/s    |

|          |       |            |         |
|----------|-------|------------|---------|
| Max.:    | 100.0 | Data Type: | UInt16  |
| Default: | 1.0   | Change:    | At stop |

**Value Range:**

0.1 mm/s–100.0 mm/s

**Description**

Sets motor stop threshold for auto-tuning. Usually no change is required.

**H32.37 Angle gain in angle auto-tuning through position lock**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-26h | Effective mode: | At stop   |
| Min.:    | 0        | Unit:           | deg/(p/s) |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 1000     | Change:         | At stop   |

**Value Range:**

0deg/(p/s)–10000deg/(p/s)

**Description**

Defines the angle gain during auto-tuning. A proper setpoint improves the auto-tuning angle accuracy. The default value applies to most of applications.

**H32.38 Inertia ratio in angle auto-tuning through position lock**

|          |          |                 |         |
|----------|----------|-----------------|---------|
| Hex:     | 2032-27h | Effective mode: | At stop |
| Min.:    | 0.00     | Unit:           | -       |
| Max.:    | 120.00   | Data Type:      | UInt16  |
| Default: | 0.00     | Change:         | At stop |

**Value Range:**

0.00–120.00

**Description**

Sets the inertia ratio gain for auto-tuning. A proper value can ensure smooth and jitter-free operation and reduce the operation range.

(1) This coefficient is usually related to the load characteristics. You can just set it to the actual inertia ratio.

(2) A small value may lead to long movement during auto-tuning, which is a normal phenomenon. A large value may lead to gain mismatch oscillation.

**H32.39 Gain class in angle auto-tuning through position lock**

|          |          |                 |         |
|----------|----------|-----------------|---------|
| Hex:     | 2032-28h | Effective mode: | At stop |
| Min.:    | 4        | Unit:           | level   |
| Max.:    | 31       | Data Type:      | UInt16  |
| Default: | 16       | Change:         | At stop |



**Value Range:**

4level to 31level

**Description**

Defines the loop stiffness level gain for auto-tuning. A proper value can ensure smooth and jitter-free operation and reduce the operation range.

(1) A small value may lead to long movement during auto-tuning, which is a normal phenomenon. A large value may lead to gain mismatch oscillation.

**H32.40 Left/Right limit function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-29h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

1. Left limit being positive
2. Left limit being negative

**Description**

Enables the left and right limit function for the motor. If the left limit is positive, the right limit is negative, and if the left limit is negative, the right limit is positive.

**H32.41 Angle auto-tuning delay upon power-on**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-2Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 3        | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Used to set automatic angle auto-tuning delay upon power-on.

**H32.45 Black box channel**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-2Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–1

**Description**

-

**H32.50 32-bit range compatibility**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-33h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 99       | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

0–99

**Description**

-

**H32.53 Motor standstill threshold for position lock angle auto-tuning**

|          |          |                 |         |
|----------|----------|-----------------|---------|
| Hex:     | 2032-36h | Effective mode: | At stop |
| Min.:    | 0.1      | Unit:           | s       |
| Max.:    | 10.0     | Data Type:      | UInt16  |
| Default: | 0.5      | Change:         | At stop |

**Value Range:**

0.1s to 10.0s

**Description**

Sets motor standstill threshold for auto-tuning. Usually no change is required.

**H32.54 Hall auto-tuning selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-37h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

When this parameter is enabled, the Hall auto-tuning will be started automatically after basic angle auto-tuning is done.

**H32.55 Hall signal UVW manual adjustment**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2032-38h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |

|                     |   |            |         |
|---------------------|---|------------|---------|
| Max.:               | 7 | Data Type: | UInt16  |
| Default:            | 0 | Change:    | At stop |
| <b>Value Range:</b> |   |            |         |
| 0–7                 |   |            |         |
| <b>Description</b>  |   |            |         |
| -                   |   |            |         |

**H32.56 UVW filter time of Hall signal**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2032-39h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | ms        |
| Max.:               | 10       | Data Type:      | UInt16    |
| Default:            | 5        | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0 ms to 10 ms       |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H32.57 Hall closed-loop locked-rotor speed**

|                                 |          |                 |              |
|---------------------------------|----------|-----------------|--------------|
| Hex:                            | 2032-3Ah | Effective mode: | Real time    |
| Min.:                           | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:                           | 65535    | Data Type:      | UInt16       |
| Default:                        | 2        | Change:         | At stop      |
| <b>Value Range:</b>             |          |                 |              |
| 0[mm/s]/[rpm]–65535[mm/s]/[rpm] |          |                 |              |
| <b>Description</b>              |          |                 |              |
| -                               |          |                 |              |

**H32.58 Hall closed-loop locked-rotor current**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2032-3Bh | Effective mode: | Real time |
| Min.:               | 0.0      | Unit:           | %         |
| Max.:               | 300.0    | Data Type:      | UInt16    |
| Default:            | 120.0    | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0.0% to 300.0%      |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

|               |                                                  |                 |           |
|---------------|--------------------------------------------------|-----------------|-----------|
| <b>H32.59</b> | <b>Hall closed-loop locked-rotor window time</b> |                 |           |
| Hex:          | 2032-3Ch                                         | Effective mode: | Real time |
| Min.:         | 0                                                | Unit:           | ms        |
| Max.:         | 2000                                             | Data Type:      | UInt16    |
| Default:      | 10                                               | Change:         | At stop   |
|               | <b>Value Range:</b>                              |                 |           |
|               | 0 ms to 2000 ms                                  |                 |           |
|               | <b>Description</b>                               |                 |           |
|               | -                                                |                 |           |
| <b>H32.60</b> | <b>Hall closed-loop inertia ratio</b>            |                 |           |
| Hex:          | 2032-3Dh                                         | Effective mode: | Real time |
| Min.:         | 0.00                                             | Unit:           | -         |
| Max.:         | 120.00                                           | Data Type:      | UInt16    |
| Default:      | 0.00                                             | Change:         | At stop   |
|               | <b>Value Range:</b>                              |                 |           |
|               | 0.00–120.00                                      |                 |           |
|               | <b>Description</b>                               |                 |           |
|               | -                                                |                 |           |
| <b>H32.61</b> | <b>Hall closed-loop rigidity</b>                 |                 |           |
| Hex:          | 2032-3Eh                                         | Effective mode: | Real time |
| Min.:         | 4                                                | Unit:           | -         |
| Max.:         | 31                                               | Data Type:      | UInt16    |
| Default:      | 16                                               | Change:         | At stop   |
|               | <b>Value Range:</b>                              |                 |           |
|               | 4–31                                             |                 |           |
|               | <b>Description</b>                               |                 |           |
|               | -                                                |                 |           |
| <b>H32.62</b> | <b>Electrical angle save flag</b>                |                 |           |
| Hex:          | 2032-3Fh                                         | Effective mode: | Real time |
| Min.:         | 0                                                | Unit:           | -         |
| Max.:         | 65535                                            | Data Type:      | UInt16    |
| Default:      | 0                                                | Change:         | Real-time |
|               | <b>Value Range:</b>                              |                 |           |
|               | 0–65535                                          |                 |           |

### Description

Automatic reset will be performed after the electrical angle is saved when dynamic Hall auto-tuning is done.

#### H32.63

##### Hall1 electric angle

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-40h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

##### Value Range:

0–65535

##### Description

-

#### H32.64

##### Hall2 electric angle

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-41h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

##### Value Range:

0–65535

##### Description

-

#### H32.65

##### Hall3 electric angle

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-42h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

##### Value Range:

0–65535

##### Description

-

#### H32.66

##### Hall4 electric angle

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2032-43h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |

|                     |       |            |         |
|---------------------|-------|------------|---------|
| Max.:               | 65535 | Data Type: | UInt16  |
| Default:            | 0     | Change:    | At stop |
| <b>Value Range:</b> |       |            |         |
| 0–65535             |       |            |         |
| <b>Description</b>  |       |            |         |
| -                   |       |            |         |

**H32.67 Hall5 electric angle**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2032-44h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H32.68 Hall6 electric angle**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2032-45h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H32.70 Motor overload protection mode**

|                                      |          |                 |                        |
|--------------------------------------|----------|-----------------|------------------------|
| Hex:                                 | 2032-47h | Effective mode: | Upon the next power-on |
| Min.:                                | 0        | Unit:           | -                      |
| Max.:                                | 3        | Data Type:      | UInt16                 |
| Default:                             | 0        | Change:         | At stop                |
| <b>Value Range:</b>                  |          |                 |                        |
| 0: Internal motor overload curve     |          |                 |                        |
| 1: External motor overload curve     |          |                 |                        |
| 2: Current limit overload protection |          |                 |                        |
| 3: Hide motor overload protection    |          |                 |                        |

### Description

-

#### H32.73

##### **Thermal threshold current of overload current limit**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2032-4Ah | Effective mode: | Upon the next power-on |
| Min.:    | 100.0    | Unit:           | %                      |
| Max.:    | 750.0    | Data Type:      | UInt16                 |
| Default: | 115.0    | Change:         | At stop                |

##### **Value Range:**

100.0% to 750.0%

##### **Description**

Thermal limit current is a percentage of motor rated current defaulted to 100%, above which the motor starts to heat continuously. The motor current will be finally maintained at this value.

#### H32.74

##### **Peak current of overload current limit**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2032-4Bh | Effective mode: | Upon the next power-on |
| Min.:    | 100.0    | Unit:           | %                      |
| Max.:    | 750.0    | Data Type:      | UInt16                 |
| Default: | 300.0    | Change:         | At stop                |

##### **Value Range:**

100.0% to 750.0%

##### **Description**

Defines the ratio of the peak current that can be reached by the motor to the rated current of the motor.

#### H32.75

##### **Max. current duration of overload protection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-4Ch | Effective mode: | Real time |
| Min.:    | 0.01     | Unit:           | s         |
| Max.:    | 655.35   | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | At stop   |

##### **Value Range:**

0.01s to 655.35s

##### **Description**

Calculate the maximum heat that can be reached by the motor based on the maximum current continuous time, and take this value as the motor overload alarm threshold.

**H32.76 Current limit time constant of overload protection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-4Dh | Effective mode: | Real time |
| Min.:    | 0.01     | Unit:           | -         |
| Max.:    | 655.35   | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | At stop   |

**Value Range:**

0.01–655.35

**Description**

It is related to the maximum current continuous time. The higher the setpoint, the longer the maximum current continuous time will be.

**H32.77 Current limit alarm threshold of overload protection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-4Eh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 750.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | At stop   |

**Value Range:**

0.0% to 750.0%

**Description**

If current limit protection is effective, and the limited current is lower than this value, the drive will raise an alarm.

**H32.78 Current limit fault threshold of overload protection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-4Fh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 750.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | At stop   |

**Value Range:**

0.0% to 750.0%

**Description**

If current limit protection is effective, and the limited current is lower than this value, the drive will report an error.

**H32.79 Thermal threshold current of overload**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2032-50h | Effective mode: | Upon the next power-on |
| Min.:    | 100.0    | Unit:           | %                      |
| Max.:    | 750.0    | Data Type:      | UInt16                 |
| Default: | 115.0    | Change:         | At stop                |



**Value Range:**

100.0% to 750.0%

**Description**

-

**H32.80 Thermal current interval of overload**

Hex: 2032-51h

Effective mode: Upon the next power-on

Min.: 0.1

Unit: %

Max.: 204.8

Data Type: UInt16

Default: 6.4

Change: At stop

**Value Range:**

0.1% to 204.8%

**Description**

-

**H32.81 Overload heat dissipation current interval**

Hex: 2032-52h

Effective mode: Upon the next power-on

Min.: 0.1

Unit: %

Max.: 204.8

Data Type: UInt16

Default: 6.4

Change: At stop

**Value Range:**

0.1% to 204.8%

**Description**

-

**H32.82 Length of overload heat dissipation curve**

Hex: 2032-53h

Effective mode: Upon the next power-on

Min.: 1

Unit: -

Max.: 200

Data Type: UInt16

Default: 1

Change: At stop

**Value Range:**

1–200

**Description**

-

**H32.83 Length of overload heat dissipation curve**

Hex: 2032-54h

Effective mode: Upon the next power-on

|                     |     |            |         |
|---------------------|-----|------------|---------|
| Min.:               | 1   | Unit:      | -       |
| Max.:               | 200 | Data Type: | UInt16  |
| Default:            | 1   | Change:    | At stop |
| <b>Value Range:</b> |     |            |         |
| 1–200               |     |            |         |
| <b>Description</b>  |     |            |         |
| -                   |     |            |         |

### 2.30 H33 Compensation Parameters

#### H33.00 Compensation data BUFFER

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-01h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

#### H33.01 Compensation data BUFFER

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-02h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

#### H33.02 Compensation data BUFFER

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-03h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |

**Description**

-

**H33.03 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-04h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.04 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-05h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.05 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-06h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.06 Compensation data BUFFER**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2033-07h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 65535    | Data Type:      | UInt16    |

|                     |   |         |         |
|---------------------|---|---------|---------|
| Default:            | 0 | Change: | At stop |
| <b>Value Range:</b> |   |         |         |
| 0–65535             |   |         |         |
| <b>Description</b>  |   |         |         |
| -                   |   |         |         |

**H33.07 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-08h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.08 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-09h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.09 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-0Ah | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.10 Compensation data BUFFER**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2033-0Bh | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |       |            |         |
|----------|-------|------------|---------|
| Min.:    | 0     | Unit:      | -       |
| Max.:    | 65535 | Data Type: | UInt16  |
| Default: | 0     | Change:    | At stop |

**Value Range:**

0–65535

**Description**

-

**H33.11 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-0Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.12 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-0Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.13 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-0Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.14 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-0Fh | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.15 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-10h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.16 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-11h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.17 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-12h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |

**Description**

-

**H33.18 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-13h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.19 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-14h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.20 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-15h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.21 Compensation data BUFFER**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2033-16h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 65535    | Data Type:      | UInt16    |

|                     |   |         |         |
|---------------------|---|---------|---------|
| Default:            | 0 | Change: | At stop |
| <b>Value Range:</b> |   |         |         |
| 0–65535             |   |         |         |
| <b>Description</b>  |   |         |         |
| -                   |   |         |         |

**H33.22 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-17h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.23 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-18h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.24 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-19h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.25 Compensation data BUFFER**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2033-1Ah | Effective mode: | Real time |
|------|----------|-----------------|-----------|



|                     |       |            |         |
|---------------------|-------|------------|---------|
| Min.:               | 0     | Unit:      | -       |
| Max.:               | 65535 | Data Type: | UInt16  |
| Default:            | 0     | Change:    | At stop |
| <b>Value Range:</b> |       |            |         |
| 0–65535             |       |            |         |
| <b>Description</b>  |       |            |         |
| -                   |       |            |         |

**H33.26 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-1Bh | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.27 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-1Ch | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.28 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-1Dh | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.29 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-1Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**  
0–65535

**Description**  
-

**H33.30 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-1Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**  
0–65535

**Description**  
-

**H33.31 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-20h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**  
0–65535

**Description**  
-

**H33.32 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-21h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**  
0–65535

**Description**

-

**H33.33 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-22h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.34 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-23h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.35 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-24h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.36 Compensation data BUFFER**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2033-25h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 65535    | Data Type:      | UInt16    |

|                     |   |         |         |
|---------------------|---|---------|---------|
| Default:            | 0 | Change: | At stop |
| <b>Value Range:</b> |   |         |         |
| 0–65535             |   |         |         |
| <b>Description</b>  |   |         |         |
| -                   |   |         |         |

**H33.37 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-26h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.38 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-27h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.39 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-28h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.40 Current Compensation BUFFER group number**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2033-29h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |       |            |         |
|----------|-------|------------|---------|
| Min.:    | 0     | Unit:      | -       |
| Max.:    | 65535 | Data Type: | UInt16  |
| Default: | 0     | Change:    | At stop |

**Value Range:**

0–65535

**Description**

-

**H33.41 Compensation data sum**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-2Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 32767    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–32767

**Description**

-

**H33.44 Data command**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-2Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

0–1

**Description**

-

**H33.45 Data storage position**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-2Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

0: Servo RAM

1: Servo FLASH

2: Encoder FLASH

**Description**

-

|               |                                   |          |                         |
|---------------|-----------------------------------|----------|-------------------------|
| <b>H33.46</b> | <b>Data clear</b>                 |          |                         |
|               | Hex:                              | 2033-2Fh | Effective    Real time  |
|               |                                   |          | mode:                   |
|               | Min.:                             | 0        | Unit:       -           |
|               | Max.:                             | 3        | Data Type: UInt16       |
|               | Default:                          | 0        | Change:    At stop      |
|               | <b>Value Range:</b>               |          |                         |
|               | 0–3                               |          |                         |
|               | <b>Description</b>                |          |                         |
|               | -                                 |          |                         |
| <b>H33.47</b> | <b>Software tool write status</b> |          |                         |
|               | Hex:                              | 2033-30h | Effective    Real time  |
|               |                                   |          | mode:                   |
|               | Min.:                             | 0        | Unit:       -           |
|               | Max.:                             | 2        | Data Type: UInt16       |
|               | Default:                          | 0        | Change:    At stop      |
|               | <b>Value Range:</b>               |          |                         |
|               | 0–2                               |          |                         |
|               | <b>Description</b>                |          |                         |
|               | -                                 |          |                         |
| <b>H33.48</b> | <b>Servo read status</b>          |          |                         |
|               | Hex:                              | 2033-31h | Effective    -          |
|               |                                   |          | mode:                   |
|               | Min.:                             | 0        | Unit:       -           |
|               | Max.:                             | 65535    | Data Type: UInt16       |
|               | Default:                          | 0        | Change:    Unchangeable |
|               | <b>Value Range:</b>               |          |                         |
|               | 0–65535                           |          |                         |
|               | <b>Description</b>                |          |                         |
|               | -                                 |          |                         |
| <b>H33.49</b> | <b>Software tool read status</b>  |          |                         |
|               | Hex:                              | 2033-32h | Effective    Real time  |
|               |                                   |          | mode:                   |
|               | Min.:                             | 0        | Unit:       -           |
|               | Max.:                             | 2        | Data Type: UInt16       |
|               | Default:                          | 0        | Change:    At stop      |
|               | <b>Value Range:</b>               |          |                         |
|               | 0–2                               |          |                         |

**Description**

-

**H33.50**

**Servo write status**

Hex: 2033-33h

Effective -

mode:

Unit: -

Min.: 0

Data Type: UInt16

Max.: 2

Default: 0

Change: Unchangeable

**Value Range:**

0–2

**Description**

-

**H33.51**

**Data transmission completed flag**

Hex: 2033-34h

Effective Real time

mode:

Unit: -

Min.: 0

Data Type: UInt16

Max.: 1

Default: 0

Change: At stop

**Value Range:**

0–1

**Description**

-

**H33.52**

**Servo data transfer completed flag**

Hex: 2033-35h

Effective Real time

mode:

Unit: -

Min.: 0

Data Type: UInt16

Max.: 1

Default: 0

Change: At stop

**Value Range:**

0–1

**Description**

-

**H33.60**

**Accuracy compensation function**

Hex: 2033-3Dh

Effective Upon the next power-on

mode:

Unit: -

Min.: 0

Data Type: UInt16

Max.: 1

Default: 0 Change: At stop

**Value Range:**

0–1

**Description**

Used to enable accuracy compensation.

### H33.61 Accuracy compensation sum

Hex: 2033-3Eh Effective mode: Upon the next power-on

Min.: 0 Unit: count

Max.: 65535 Data Type: UInt16

Default: 0 Change: At stop

**Value Range:**

0count to 65535count

**Description**

Total accuracy compensation points.

### H33.62 Starting offset address of accuracy compensation

Hex: 2033-3Fh Effective mode: Upon the next power-on

Min.: -21474836.48 Unit: [mm]/[deg]

Max.: 21474836.47 Data Type: Int32

Default: 0.00 Change: At stop

**Value Range:**

-21474836.48[mm]/[deg]–21474836.47[mm]/[deg]

**Description**

The direct-drive motor compensation home of incremental encoder is the home of the mechanical system coordinate.

### H33.64 Accuracy compensation data interval

Hex: 2033-41h Effective mode: Upon the next power-on

Min.: -327.67 Unit: [mm]/[deg]

Max.: 327.67 Data Type: Int16

Default: 0.00 Change: At stop

**Value Range:**

-327.67[mm]/[deg]–327.67[mm]/[deg]

**Description**

Interval of adjacent compensation points of accuracy compensation.



**H33.65 Accuracy compensation dial phase sequence**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2033-42h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 65535    | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0–65535

**Description**

Phase sequence record of accuracy compensation dial stage.

**H33.66 Accuracy compensation dial reference direction**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2033-43h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0–1

**Description**

Reference direction record of accuracy compensation dial stage.

**H33.67 Servo homing completed**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2033-44h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Accuracy compensation homing completion signal.

**H33.68 Current acting index of accuracy compensation**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2033-45h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Current compensation position of accuracy compensation.

**H33.69****Forced homing start**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-46h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–1

**Description**

Enables accuracy compensation forced homing.

**H33.70****Forced homing mode**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2033-47h | Effective mode: | Upon the next power-on |
| Min.:    | -32768   | Unit:           | -                      |
| Max.:    | 32767    | Data Type:      | Int16                  |
| Default: | -2       | Change:         | At stop                |

**Value Range:**

-32768–32767

**Description**

Homing mode record of accuracy compensation dial stage.

**H33.71****Forced homing at low speed**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2033-48h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm]           |
| Max.:    | 1000     | Data Type:      | UInt16                 |
| Default: | 10       | Change:         | At stop                |

**Value Range:**

0[mm/s]/[rpm]–1000[mm/s]/[rpm]

**Description**

Homing speed record of accuracy compensation dial stage.

**H33.72****Single-turn absolute position of accuracy compensation home of absolute encoder**

|       |          |                 |                        |
|-------|----------|-----------------|------------------------|
| Hex:  | 2033-49h | Effective mode: | Upon the next power-on |
| Min.: | 0        | Unit:           | p                      |

|          |            |            |         |
|----------|------------|------------|---------|
| Max.:    | 4294967295 | Data Type: | UInt32  |
| Default: | 0          | Change:    | At stop |

**Value Range:**

0p to 4294967295p

**Description**

Single-turn absolute value of direct-drive motor compensation home of absolute encoder.

**H33.74 Min.pulse width of frequency-division output accuracy compensation**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2033-4Bh | Effective mode: | Upon the next power-on |
| Min.:    | 2        | Unit:           | count                  |
| Max.:    | 7        | Data Type:      | UInt16                 |
| Default: | 3        | Change:         | At stop                |

**Value Range:**

2count to 7count

**Description**

Defines the minimum pulse width of accuracy compensation frequency-division output.

**H33.75 Accuracy compensation data unit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-4Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: [um]/[arcsec]

1: [mm]/[mrad]

**Description**

Defines the accuracy compensation data unit.

For DDL: 0-um; 1-mm;

For DDR: 0-arcsec; 2-mrad

**H33.81 Motor cogging torque ripple compensation sum**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-52h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | count     |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 2000     | Change:         | At stop   |

**Value Range:**

0count to 65535count

**Description**

Motor cogging torque ripple compensation sum

## 2.31 H34 Servo Motor Parameters 2

### H34.12 Error type supported by Endat2.2 encoder

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2034-0Dh | Effective  | -            |
| Min.:    | 0        | mode:      |              |
| Max.:    | 65535    | Unit:      | -            |
| Default: | 0        | Data Type: | UInt16       |
|          |          | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

bit0: Light source

bit1: Signal amplitude

bit2: Position

bit3: Overvoltage

bit4: Undervoltage

bit5: Overcurrent

bit6: Battery

bit0: Light source

bit1: Signal amplitude

bit2: Position

bit3: Overvoltage

bit4: Undervoltage

bit5: Overcurrent

bit6: Battery

### H34.13 Alarm types supported by EnDat2.2 encoders

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2034-0Eh | Effective  | -            |
| Min.:    | 0        | mode:      |              |
| Max.:    | 65535    | Unit:      | -            |
| Default: | 0        | Data Type: | UInt16       |
|          |          | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

bit0: Frequency collision  
bit1: Temperature exceeded  
bit2: Light source control reserve  
bit3: Battery charge  
bit4: Reference points  
bit5: Cyclic mode  
bit6: Limit position  
bit7: Readiness  
bit8: Diagnostics

**H34.14 Error value supported by Endat2.2 encoder**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2034-0Fh | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

bit0: Light source  
bit1: Signal amplitude  
bit2: Position  
bit3: Overvoltage  
bit4: Undervoltage  
bit5: Overcurrent  
bit6: Battery  
bit0: Light source  
bit1: Signal amplitude  
bit2: Position  
bit3: Overvoltage  
bit4: Undervoltage  
bit5: Overcurrent  
bit6: Battery

**H34.15 Alarm values supported by EnDat2.2 encoder**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2034-10h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

bit0: Frequency collision

bit1: Temperature exceeded

bit2: Light source control reserve

bit3: Battery charge

bit4: Reference points

bit5: Cyclic mode

bit6: Limit position

bit7: Readinessbit8: Diagnostics

# 2.32 1000h Object Dictionary

**1005h**

**SYNC message COB-ID**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1005h      | Effective mode: | Real time |
| Min.:    | 128        | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 128        | Change:         | Real-time |

**Value Range:**

128–4294967295

**Description**

Only 0x80h and 0x40000080h can be written to the SYNC message.

If 0x80h is written, the sync generator does not work.

If 0x40000080h is written, the sync generator is activated.

To activate the sync generator, you must set 1006h to a non-zero value.

**1006h**

**Synchronization cycle**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1006h      | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | us        |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0us to 2147483647us

**Description**

Applicable to the synchronization generator only (unit: us).

**100Ch Node guarding time**

|          |       |            |           |
|----------|-------|------------|-----------|
| Hex:     | 100Ch | Effective  | Real time |
|          |       | mode:      |           |
| Min.:    | 0     | Unit:      | ms        |
| Max.:    | 65535 | Data Type: | UInt16    |
| Default: | 0     | Change:    | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Defines the node daemon running time, in ms.

**100dh Life factor**

|          |       |            |           |
|----------|-------|------------|-----------|
| Hex:     | 100dh | Effective  | Real time |
|          |       | mode:      |           |
| Min.:    | 0     | Unit:      | -         |
| Max.:    | 255   | Data Type: | UInt16    |
| Default: | 0     | Change:    | Real-time |

**Value Range:**

0–255

**Description**

This parameter must be used together with the node daemon function and must be set to a value greater than 1.

**1014h Emergency message COB-ID**

|          |            |            |           |
|----------|------------|------------|-----------|
| Hex:     | 1014h      | Effective  | Real time |
|          |            | mode:      |           |
| Min.:    | 0          | Unit:      | -         |
| Max.:    | 4294967295 | Data Type: | UInt32    |
| Default: | 128        | Change:    | Real-time |

**Value Range:**

0–4294967295

**Description**

The most significant bit indicates whether to disable the emergency message of the device. Only the data "0x80+Node\_ID" can be written for the bit to enable the emergency message of the device.

If the data "0x80000080+Node\_ID" is written, the emergency message is disabled.

When the emergency message is enabled, the COB-ID must be the same as that of the object.

**1016.01h Consumer heartbeat time 1**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1016-01h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

Parameters include the address of the monitored node and actual consumer time, which must be longer than the heartbeat producer time (unit: ms) of the corresponding node. Two different consumer time cannot be set for one node.

Bits 0 to 15: Monitoring time

Bits 16 to 23: The monitored address

Bits 24 to 31: Reserved (0)

**1016.02h Consumer heartbeat time 2**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1016-02h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

Same as 1016.01h.

**1016.03h Consumer heartbeat time 3**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1016-03h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

Same as 1016.01h.

**1016.04h Consumer heartbeat time 4**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 1016-04h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |



Max.: 2147483647      Data Type: UInt32  
Default: 0      Change: Real-time  
**Value Range:**  
0–2147483647  
**Description**  
Same as 1016.01h.

**1016.05h    Consumer heartbeat time 5**

Hex: 1016-05h      Effective    Real time  
mode:  
Min.: 0      Unit: -  
Max.: 2147483647      Data Type: UInt32  
Default: 0      Change: Real-time  
**Value Range:**  
0–2147483647  
**Description**  
Same as 1016.01h.

**1017h        Producer heartbeat time**

Hex: 1017h      Effective    Real time  
mode:  
Min.: 0      Unit: ms  
Max.: 65535      Data Type: UInt16  
Default: 0      Change: Real-time  
**Value Range:**  
0 ms to 65535 ms  
**Description**  
Defines the heartbeat production time of the slave, in ms.

**1400.01h    COB-ID of RPDO1**

Hex: 1400-01h      Effective    Real time  
mode:  
Min.: 0      Unit: -  
Max.: 4294967295      Data Type: UInt32  
Default: 512      Change: Real-time  
**Value Range:**  
0–4294967295  
**Description**  
Only the most significant bit can be modified. When the most significant bit is 0, the PDO is active. When the most significant bit is 1, the PDO is inactive.

The factory settings are as follows:

1400h: 0x00000200 + Node\_ID

1401h: 0x80000300 + Node\_ID

1402h: 0x80000400 + Node\_ID

1403h: 0x80000500 + Node\_ID

#### 1400.02h Transmission type of RPDO1

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 1400-02h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 255      | Data Type:      | UInt16    |
| Default: | 255      | Change:         | Real-time |

##### Value Range:

0–255

##### Description

This parameter can be modified only when PDO is inactive.

Different values correspond to different PDO transmission types, as follows:

0: Not circle synchronous data

1 to 240: Circle synchronous data

254 and 255: Not circle asynchronous data

#### 1401.01h COB-ID of RPDO2

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1401-01h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 768        | Change:         | Real-time |

##### Value Range:

0–4294967295

##### Description

Same as 1400.01h.

#### 1401.02h Transmission type of RPDO2

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 1401-02h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 255      | Data Type:      | UInt16    |
| Default: | 255      | Change:         | Real-time |

##### Value Range:

0–255

**Description**

Same as 1400.02h.

**1402.01h COB-ID of RPDO3**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1402-01h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 2147484672 | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

Same as 1400.01h.

**1402.02h Transmission type of RPDO3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 1402-02h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 255      | Data Type:      | UInt16    |
| Default: | 255      | Change:         | Real-time |

**Value Range:**

0–255

**Description**

Same as 1400.02h.

**1403.01h COB-ID of RPDO4**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1403-01h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 2147484928 | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

Same as 1400.01h.

**1403.02h Transmission type of RPDO4**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 1403-02h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 255      | Data Type:      | UInt16    |
| Default: | 255      | Change:         | Real-time |

**Value Range:**

0–255

**Description**

Same as 1400.02h.

**1600.00h Number of valid mapped objects in RPDO1**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 1600-00h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 8        | Data Type:      | UInt16    |
| Default: | 3        | Change:         | Real-time |

**Value Range:**

0–8

**Description**

This object can be modified only when PDO is inactive. When 0 is written, the mapping objects of other sub-indexes are cleared.

**1600.01h Mapped object 1 in RPDO1**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1600-01h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 1614807056 | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

The total length of a mapping object cannot exceed 64 bits. Mapping based on bytes instead of bits is supported. The indexes and sub-indexes of mapping objects must exist in the object dictionary list. The attribute of mapping objects is readable and the objects can be mapped.

Sub-indexes are written in the following format:

Bit 16 to bit 31: Index

Bit 8 to bit 15: Sub-index

Bit 0 to bit 7: Object length

**1600.02h Mapped object 2 in RPDO1**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1600-02h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 1627324448 | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

Same as 1600.01h.

**1600.03h Mapped object 3 in RPDO1**

Hex: 1600-03h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 2147483647

Data Type: UInt32

Default: 1616904200

Change: Real-time

**Value Range:**

0–2147483647

**Description**

Same as 1600.01h.

**1600.04h Mapped object 4 in RPDO1**

Hex: 1600-04h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 2147483647

Data Type: UInt32

Default: 0

Change: Real-time

**Value Range:**

0–2147483647

**Description**

Same as 1600.01h.

**1600.05h Mapped object 5 in RPDO1**

Hex: 1600-05h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 2147483647

Data Type: UInt32

Default: 0

Change: Real-time

**Value Range:**

0–2147483647

**Description**

Same as 1600.01h.

**1600.06h Mapped object 6 in RPDO1**

Hex: 1600-06h

Effective mode: Real time

|          |            |            |           |
|----------|------------|------------|-----------|
| Min.:    | 0          | Unit:      | -         |
| Max.:    | 2147483647 | Data Type: | UInt32    |
| Default: | 0          | Change:    | Real-time |

**Value Range:**

0–2147483647

**Description**

Same as 1600.01h.

**1600.07h Mapped object 7 in RPDO1**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1600-07h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

Same as 1600.01h.

**1600.08h Mapped object 8 in RPDO1**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1600-08h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

Same as 1600.01h.

**1601.00h Number of valid mapped objects in RPDO2**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 1601-00h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 8        | Data Type:      | UInt16    |
| Default: | 2        | Change:         | Real-time |

**Value Range:**

0–8

**Description**

This object can be modified only when PDO is inactive. When 0 is written, the mapping objects of other sub-indexes are cleared.

**1601.01h    Mapped object 1 in RPDO2**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1601-01h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 1618608160 | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

The total length of a mapping object cannot exceed 64 bits. Mapping based on bytes instead of bits is supported. The indexes and sub-indexes of mapping objects must exist in the object dictionary list. The attribute of mapping objects is readable and the objects can be mapped.

Sub-indexes are written in the following format:

Bit 16 to bit 31: Index

Bit 8 to bit 15: Sub-index

Bit 0 to bit 7: Object length

**1601.02h    Mapped object 2 in RPDO2**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1601-02h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 1619066912 | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

Same as 1601.01h.

**1601.03h    Mapped object 3 in RPDO2**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1601-03h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

Same as 1601.01h.

**1601.04h Mapped object 4 in RPDO2**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1601-04h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 2147483647 | Data Type:      | UInt32    |
| Default:            | 0          | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–2147483647        |            |                 |           |
| <b>Description</b>  |            |                 |           |
| Same as 1601.01h.   |            |                 |           |

**1601.05h Mapped object 5 in RPDO2**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1601-05h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 2147483647 | Data Type:      | UInt32    |
| Default:            | 0          | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–2147483647        |            |                 |           |
| <b>Description</b>  |            |                 |           |
| Same as 1601.01h.   |            |                 |           |

**1601.06h Mapped object 6 in RPDO2**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1601-06h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 2147483647 | Data Type:      | UInt32    |
| Default:            | 0          | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–2147483647        |            |                 |           |
| <b>Description</b>  |            |                 |           |
| Same as 1601.01h.   |            |                 |           |

**1601.07h Mapped object 7 in RPDO2**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1601-07h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 2147483647 | Data Type:      | UInt32    |
| Default:            | 0          | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–2147483647        |            |                 |           |



**Description**

Same as 1601.01h.

**1601.08h Mapped object 8 in RPDO2**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1601-08h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

Same as 1601.01h.

**1602.00h Number of valid mapped objects in RPDO3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 1602-00h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 8        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–8

**Description**

This object can be modified only when PDO is inactive. When 0 is written, the mapping objects of other sub-indexes are cleared.

**1602.01h Mapped object 1 in RPDO3**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1602-01h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

The total length of a mapping object cannot exceed 64 bits. Mapping based on bytes instead of bits is supported. The indexes and sub-indexes of mapping objects must exist in the object dictionary list. The attribute of mapping objects is readable and the objects can be mapped.

Sub-indexes are written in the following format:

Bit 16 to bit 31: Index

Bit 8 to bit 15: Sub-index  
 Bit 0 to bit 7: Object length

### 1602.02h Mapped object 2 in RPDO3

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1602-02h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**  
 0–2147483647

**Description**  
 Same as 1602.01h.

### 1602.03h Mapped object 3 in RPDO3

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1602-03h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**  
 0–2147483647

**Description**  
 Same as 1602.01h.

### 1602.04h Mapped object 4 in RPDO3

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1602-04h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**  
 0–2147483647

**Description**  
 Same as 1602.01h.

### 1602.05h Mapped object 5 in RPDO3

|       |            |                 |           |
|-------|------------|-----------------|-----------|
| Hex:  | 1602-05h   | Effective mode: | Real time |
| Min.: | 0          | Unit:           | -         |
| Max.: | 2147483647 | Data Type:      | UInt32    |

|                     |   |         |           |
|---------------------|---|---------|-----------|
| Default:            | 0 | Change: | Real-time |
| <b>Value Range:</b> |   |         |           |
| 0–2147483647        |   |         |           |
| <b>Description</b>  |   |         |           |
| Same as 1602.01h.   |   |         |           |

**1602.06h    Mapped object 6 in RPDO3**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1602-06h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 2147483647 | Data Type:      | UInt32    |
| Default:            | 0          | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–2147483647        |            |                 |           |
| <b>Description</b>  |            |                 |           |
| Same as 1602.01h.   |            |                 |           |

**1602.07h    Mapped object 7 in RPDO3**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1602-07h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 2147483647 | Data Type:      | UInt32    |
| Default:            | 0          | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–2147483647        |            |                 |           |
| <b>Description</b>  |            |                 |           |
| Same as 1602.01h.   |            |                 |           |

**1602.08h    Mapped object 8 in RPDO3**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1602-08h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 2147483647 | Data Type:      | UInt32    |
| Default:            | 0          | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–2147483647        |            |                 |           |
| <b>Description</b>  |            |                 |           |
| Same as 1602.01h.   |            |                 |           |

**1603.00h    Number of valid mapped objects in RPDO4**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 1603-00h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |   |            |           |
|----------|---|------------|-----------|
| Min.:    | 0 | Unit:      | -         |
| Max.:    | 8 | Data Type: | UInt16    |
| Default: | 0 | Change:    | Real-time |

**Value Range:**

0–8

**Description**

This object can be modified only when PDO is inactive. When 0 is written, the mapping objects of other sub-indexes are cleared.

**1603.01h Mapped object 1 in RPDO4**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1603-01h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

The total length of a mapping object cannot exceed 64 bits. Mapping based on bytes instead of bits is supported. The indexes and sub-indexes of mapping objects must exist in the object dictionary list. The attribute of mapping objects is readable and the objects can be mapped.

Sub-indexes are written in the following format:

Bit 16 to bit 31: Index

Bit 8 to bit 15: Sub-index

Bit 0 to bit 7: Object length

**1603.02h Mapped object 2 in RPDO4**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1603-02h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

Same as 1603.01h.

**1603.03h Mapped object 3 in RPDO4**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 1603-03h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|                     |            |            |           |
|---------------------|------------|------------|-----------|
| Min.:               | 0          | Unit:      | -         |
| Max.:               | 2147483647 | Data Type: | UInt32    |
| Default:            | 0          | Change:    | Real-time |
| <b>Value Range:</b> |            |            |           |
| 0–2147483647        |            |            |           |
| <b>Description</b>  |            |            |           |
| Same as 1603.01h.   |            |            |           |

**1603.04h Mapped object 4 in RPDO4**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1603-04h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 2147483647 | Data Type:      | UInt32    |
| Default:            | 0          | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–2147483647        |            |                 |           |
| <b>Description</b>  |            |                 |           |
| Same as 1603.01h.   |            |                 |           |

**1603.05h Mapped object 5 in RPDO4**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1603-05h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 2147483647 | Data Type:      | UInt32    |
| Default:            | 0          | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–2147483647        |            |                 |           |
| <b>Description</b>  |            |                 |           |
| Same as 1603.01h.   |            |                 |           |

**1603.06h Mapped object 6 in RPDO4**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1603-06h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 2147483647 | Data Type:      | UInt32    |
| Default:            | 0          | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–2147483647        |            |                 |           |
| <b>Description</b>  |            |                 |           |
| Same as 1603.01h.   |            |                 |           |

**1603.07h Mapped object 7 in RPDO4**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1603-07h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

Same as 1603.01h.

**1603.08h Mapped object 8 in RPDO4**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1603-08h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

Same as 1603.01h.

**1800.01h COB-ID of TPDO1**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1800-01h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 1073742208 | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

Only the MSB and the second MSB can be modified.

When the most significant bit is 0, the PDO is active. When the most significant bit is 1, the PDO is inactive.

The second most significant bit defines whether the PDO can be triggered by a remote frame. You are recommended to set this bit to 1 to disable the remote frame to trigger the PDO.

The factory settings are as follows:

1800h: 0x40000180 + Node\_ID

1801h: 0xC0000280 + Node\_ID

1802h: 0xC0000380 + Node\_ID

1803h: 0xC0000480 + Node\_ID

**1800.02h Transmission type of TPDO1**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 1800-02h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 255      | Data Type:      | UInt16    |
| Default: | 255      | Change:         | Real-time |

**Value Range:**

0–255

**Description**

This parameter can be modified only when PDO is inactive. Different values correspond to different PDO transmission types, as follows:

0: Not circle synchronous data

1 to 240: Circle synchronous data

254 and 255: Not circle asynchronous data

**1800.03h Inhibit time of TPDO1**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 1800-03h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | 100us     |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 500      | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

This parameter can be modified only when PDO is inactive.

The unit is 100  $\mu$ s. The value 0 indicates that the inhibit time is invalid.

**1800.05h Event counter of TPDO1**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 1800-05h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

This parameter can be modified only when PDO is inactive.

When the unit is ms, the value 0 indicates that the event counter is inactive.

**1801.01h COB-ID of TPDO2**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 1801-01h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

Min.: 0  
 Max.: 4294967295  
 Default: 1073742464

Unit: -  
 Data Type: UInt32  
 Change: Real-time

**Value Range:**

0–4294967295

**Description**

Same as 1800.01h.

**1801.02h Transmission type of TPDO2**

Hex: 1801-02h

Effective mode: Real time

Min.: 0  
 Max.: 255  
 Default: 255

Unit: -  
 Data Type: UInt16  
 Change: Real-time

**Value Range:**

0–255

**Description**

Same as 1800.02h.

**1801.03h Inhibit time of TPDO2**

Hex: 1801-03h

Effective mode: Real time

Min.: 0  
 Max.: 65535  
 Default: 500

Unit: 100us  
 Data Type: UInt16  
 Change: Real-time

**Value Range:**

0–65535

**Description**

Same as 1800.03h.

**1801.05h Event counter of TPDO2**

Hex: 1801-05h

Effective mode: Real time

Min.: 0  
 Max.: 65535  
 Default: 0

Unit: ms  
 Data Type: UInt16  
 Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

Same as 1800.05h.



**1802.01h COB-ID of TPDO3**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1802-01h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 4294967295 | Data Type:      | UInt32    |
| Default:            | 3221226368 | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–4294967295        |            |                 |           |
| <b>Description</b>  |            |                 |           |
| Same as 1800.01h.   |            |                 |           |

**1802.02h Transmission type of TPDO3**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 1802-02h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 255      | Data Type:      | UInt16    |
| Default:            | 255      | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0–255               |          |                 |           |
| <b>Description</b>  |          |                 |           |
| Same as 1800.02h.   |          |                 |           |

**1802.03h Inhibit time of TPDO3**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 1802-03h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | 100us     |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 500      | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| Same as 1800.03h.   |          |                 |           |

**1802.05h Event counter of TPDO3**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 1802-05h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | ms        |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0 ms to 65535 ms    |          |                 |           |

**Description**

Same as 1800.05h.

**1803.01h COB-ID of TPDO4**

Hex: 1803-01h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 4294967295

Data Type: UInt32

Default: 3221226624

Change: Real-time

**Value Range:**

0–4294967295

**Description**

Same as 1800.01h.

**1803.02h Transmission type of TPDO4**

Hex: 1803-02h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 255

Data Type: UInt16

Default: 255

Change: Real-time

**Value Range:**

0–255

**Description**

Same as 1800.02h.

**1803.03h Inhibit time of TPDO4**

Hex: 1803-03h

Effective Real time

mode:

Min.: 0

Unit: 100us

Max.: 65535

Data Type: UInt16

Default: 500

Change: Real-time

**Value Range:**

0–65535

**Description**

Same as 1800.03h.

**1803.05h Event counter of TPDO4**

Hex: 1803-05h

Effective Real time

mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

Same as 1800.05h.

**1A00.00h Number of valid mapped objects in TPDO1**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 1A00-00h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 8        | Data Type:      | UInt16    |
| Default: | 3        | Change:         | Real-time |

**Value Range:**

0–8

**Description**

This object can be modified only when PDO is inactive. When 0 is written, the mapping objects of other sub-indexes are cleared.

**1A00.01h Mapped object 1 in TPDO1**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1A00-01h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 1614872592 | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

The total length of a mapping object cannot exceed 64 bits. Mapping based on bytes instead of bits is supported. The indexes and sub-indexes of mapping objects must exist in the object dictionary list. The attribute of mapping objects is readable and the objects can be mapped.

Sub-indexes are written in the following format:

Bit 16 to bit 31: Index

Bit 8 to bit 15: Sub-index

Bit 0 to bit 7: Object length

**1A00.02h Mapped object 2 in TPDO1**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1A00-02h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 1627193376 | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

Same as 1A00.01h.

**1A00.03h Mapped object 3 in TPDO1**

Hex: 1A00-03h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 2147483647

Data Type: UInt32

Default: 1616969736

Change: Real-time

**Value Range:**

0–2147483647

**Description**

Same as 1A00.01h.

**1A00.04h Mapped object 4 in TPDO1**

Hex: 1A00-04h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 2147483647

Data Type: UInt32

Default: 0

Change: Real-time

**Value Range:**

0–2147483647

**Description**

Same as 1A00.01h.

**1A00.05h Mapped object 5 in TPDO1**

Hex: 1A00-05h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 2147483647

Data Type: UInt32

Default: 0

Change: Real-time

**Value Range:**

0–2147483647

**Description**

Same as 1A00.01h.

**1A00.06h Mapped object 6 in TPDO1**

Hex: 1A00-06h

Effective mode: Real time

|                     |            |            |           |
|---------------------|------------|------------|-----------|
| Min.:               | 0          | Unit:      | -         |
| Max.:               | 2147483647 | Data Type: | UInt32    |
| Default:            | 0          | Change:    | Real-time |
| <b>Value Range:</b> |            |            |           |
| 0–2147483647        |            |            |           |
| <b>Description</b>  |            |            |           |
| Same as 1A00.01h.   |            |            |           |

**1A00.07h Mapped object 7 in TPDO1**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1A00-07h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 2147483647 | Data Type:      | UInt32    |
| Default:            | 0          | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–2147483647        |            |                 |           |
| <b>Description</b>  |            |                 |           |
| Same as 1A00.01h.   |            |                 |           |

**1A00.08h Mapped object 8 in TPDO1**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1A00-08h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 2147483647 | Data Type:      | UInt32    |
| Default:            | 0          | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–2147483647        |            |                 |           |
| <b>Description</b>  |            |                 |           |
| Same as 1A00.01h.   |            |                 |           |

**1A01.00h Number of valid mapped objects in TPDO2**

|                                                                                                                                 |          |                 |           |
|---------------------------------------------------------------------------------------------------------------------------------|----------|-----------------|-----------|
| Hex:                                                                                                                            | 1A01-00h | Effective mode: | Real time |
| Min.:                                                                                                                           | 0        | Unit:           | -         |
| Max.:                                                                                                                           | 8        | Data Type:      | UInt16    |
| Default:                                                                                                                        | 2        | Change:         | Real-time |
| <b>Value Range:</b>                                                                                                             |          |                 |           |
| 0–8                                                                                                                             |          |                 |           |
| <b>Description</b>                                                                                                              |          |                 |           |
| This object can be modified only when PDO is inactive. When 0 is written, the mapping objects of other sub-indexes are cleared. |          |                 |           |

**1A01.01h Mapped object 1 in TPDO2**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1A01-01h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 1617166368 | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

The total length of a mapping object cannot exceed 64 bits. Mapping based on bytes instead of bits is supported. The indexes and sub-indexes of mapping objects must exist in the object dictionary list. The attribute of mapping objects is readable and the objects can be mapped.

Sub-indexes are written in the following format:

Bit 16 to bit 31: Index

Bit 8 to bit 15: Sub-index

Bit 0 to bit 7: Object length

**1A01.02h Mapped object 2 in TPDO2**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1A01-02h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 1617690656 | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

Same as 1A01.01h.

**1A01.03h Mapped object 3 in TPDO2**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1A01-03h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

Same as 1A01.01h.

**1A01.04h    Mapped object 4 in TPDO2**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1A01-04h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 2147483647 | Data Type:      | UInt32    |
| Default:            | 0          | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–2147483647        |            |                 |           |
| <b>Description</b>  |            |                 |           |
| Same as 1A01.01h.   |            |                 |           |

**1A01.05h    Mapped object 5 in TPDO2**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1A01-05h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 2147483647 | Data Type:      | UInt32    |
| Default:            | 0          | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–2147483647        |            |                 |           |
| <b>Description</b>  |            |                 |           |
| Same as 1A01.01h.   |            |                 |           |

**1A01.06h    Mapped object 6 in TPDO2**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1A01-06h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 2147483647 | Data Type:      | UInt32    |
| Default:            | 0          | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–2147483647        |            |                 |           |
| <b>Description</b>  |            |                 |           |
| Same as 1A01.01h.   |            |                 |           |

**1A01.07h    Mapped object 7 in TPDO2**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1A01-07h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 2147483647 | Data Type:      | UInt32    |
| Default:            | 0          | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–2147483647        |            |                 |           |

**Description**

Same as 1A01.01h.

**1A01.08h Mapped object 8 in TPDO2**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1A01-08h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

Same as 1A01.01h.

**1A02.00h Number of valid mapped objects in TPDO3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 1A02-00h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 8        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–8

**Description**

This object can be modified only when PDO is inactive. When 0 is written, the mapping objects of other sub-indexes are cleared.

**1A02.01h Mapped object 1 in TPDO3**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1A02-01h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

The total length of a mapping object cannot exceed 64 bits. Mapping based on bytes instead of bits is supported. The indexes and sub-indexes of mapping objects must exist in the object dictionary list. The attribute of mapping objects is readable and the objects can be mapped.

Sub-indexes are written in the following format:

Bit 16 to bit 31: Index



Bit 8 to bit 15: Sub-index  
Bit 0 to bit 7: Object length

**1A02.02h Mapped object 2 in TPDO3**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1A02-02h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**  
0–2147483647

**Description**  
Same as 1A02.01h.

**1A02.03h Mapped object 3 in TPDO3**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1A02-03h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**  
0–2147483647

**Description**  
Same as 1A02.01h.

**1A02.04h Mapped object 4 in TPDO3**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1A02-04h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**  
0–2147483647

**Description**  
Same as 1A02.01h.

**1A02.05h Mapped object 5 in TPDO3**

|       |            |                 |           |
|-------|------------|-----------------|-----------|
| Hex:  | 1A02-05h   | Effective mode: | Real time |
| Min.: | 0          | Unit:           | -         |
| Max.: | 2147483647 | Data Type:      | UInt32    |

Default: 0

Change: Real-time

**Value Range:**

0–2147483647

**Description**

Same as 1A02.01h.

**1A02.06h Mapped object 6 in TPDO3**

Hex: 1A02-06h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 2147483647

Data Type: UInt32

Default: 0

Change: Real-time

**Value Range:**

0–2147483647

**Description**

Same as 1A02.01h.

**1A02.07h Mapped object 7 in TPDO3**

Hex: 1A02-07h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 2147483647

Data Type: UInt32

Default: 0

Change: Real-time

**Value Range:**

0–2147483647

**Description**

Same as 1A02.01h.

**1A02.08h Mapped object 8 in TPDO3**

Hex: 1A02-08h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 2147483647

Data Type: UInt32

Default: 0

Change: Real-time

**Value Range:**

0–2147483647

**Description**

Same as 1A02.01h.

**1A03.00h Number of valid mapped objects in TPDO4**

Hex: 1A03-00h

Effective Real time

mode:

|          |   |            |           |
|----------|---|------------|-----------|
| Min.:    | 0 | Unit:      | -         |
| Max.:    | 8 | Data Type: | UInt16    |
| Default: | 0 | Change:    | Real-time |

**Value Range:**

0–8

**Description**

This object can be modified only when PDO is inactive. When 0 is written, the mapping objects of other sub-indexes are cleared.

**1A03.01h Mapped object 1 in TPDO4**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1A03-01h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

The total length of a mapping object cannot exceed 64 bits. Mapping based on bytes instead of bits is supported. The indexes and sub-indexes of mapping objects must exist in the object dictionary list. The attribute of mapping objects is readable and the objects can be mapped.

Sub-indexes are written in the following format:

Bit 16 to bit 31: Index

Bit 8 to bit 15: Sub-index

Bit 0 to bit 7: Object length

**1A03.02h Mapped object 2 in TPDO4**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 1A03-02h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–2147483647

**Description**

Same as 1A03.01h.

**1A03.03h Mapped object 3 in TPDO4**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 1A03-03h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

Min.: 0  
 Max.: 2147483647  
 Default: 0

Unit: -  
 Data Type: UInt32  
 Change: Real-time

**Value Range:**

0–2147483647

**Description**

Same as 1A03.01h.

**1A03.04h Mapped object 4 in TPDO4**

Hex: 1A03-04h

Effective mode: Real time

Min.: 0  
 Max.: 2147483647  
 Default: 0

Unit: -  
 Data Type: UInt32  
 Change: Real-time

**Value Range:**

0–2147483647

**Description**

Same as 1A03.01h.

**1A03.05h Mapped object 5 in TPDO4**

Hex: 1A03-05h

Effective mode: Real time

Min.: 0  
 Max.: 2147483647  
 Default: 0

Unit: -  
 Data Type: UInt32  
 Change: Real-time

**Value Range:**

0–2147483647

**Description**

Same as 1A03.01h.

**1A03.06h Mapped object 6 in TPDO4**

Hex: 1A03-06h

Effective mode: Real time

Min.: 0  
 Max.: 2147483647  
 Default: 0

Unit: -  
 Data Type: UInt32  
 Change: Real-time

**Value Range:**

0–2147483647

**Description**

Same as 1A03.01h.

**1A03.07h    Mapped object 7 in TPDO4**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1A03-07h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 2147483647 | Data Type:      | UInt32    |
| Default:            | 0          | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–2147483647        |            |                 |           |
| <b>Description</b>  |            |                 |           |
| Same as 1A03.01h.   |            |                 |           |

**1A03.08h    Mapped object 8 in TPDO4**

|                     |            |                 |           |
|---------------------|------------|-----------------|-----------|
| Hex:                | 1A03-08h   | Effective mode: | Real time |
| Min.:               | 0          | Unit:           | -         |
| Max.:               | 2147483647 | Data Type:      | UInt32    |
| Default:            | 0          | Change:         | Real-time |
| <b>Value Range:</b> |            |                 |           |
| 0–2147483647        |            |                 |           |
| <b>Description</b>  |            |                 |           |
| Same as 1A03.01h.   |            |                 |           |

**2.33    6000h Object Dictionary**

**603Fh    Error code**

|                     |       |                 |              |
|---------------------|-------|-----------------|--------------|
| Hex:                | 603Fh | Effective mode: | -            |
| Min.:               | 0     | Unit:           | -            |
| Max.:               | 65535 | Data Type:      | UInt16       |
| Default:            | 0     | Change:         | Unchangeable |
| <b>Value Range:</b> |       |                 |              |
| 0–65535             |       |                 |              |
| <b>Description</b>  |       |                 |              |

When an error described in the DSP402 profile occurs on the servo drive, 603Fh is as described in DSP402.

When an error specified by the user occurs on the servo drive, 603Fh is 0xFF00.

The value of 603Fh is in hexadecimal.

In addition, the object dictionary 203Fh displays auxiliary bytes of fault codes in hexadecimal.

203Fh is a UInt 32 value, in which the high 16 bits indicate the manufacturer internal fault code, and the low 16 bits indicate the manufacturer external fault code.

**6040h****Control word**

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 6040h | Effective mode: | Real time |
| Min.:    | 0     | Unit:           | -         |
| Max.:    | 65535 | Data Type:      | UInt16    |
| Default: | 0     | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

For details, see section Basic Functions of the function guide.

**6041h****Status word**

|          |       |                 |              |
|----------|-------|-----------------|--------------|
| Hex:     | 6041h | Effective mode: | -            |
| Min.:    | 0     | Unit:           | -            |
| Max.:    | 65535 | Data Type:      | UInt16       |
| Default: | 0     | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

For details, see section Basic Functions of the function guide.

**605Ah****Quick stop mode**

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 605Ah | Effective mode: | At stop   |
| Min.:    | 0     | Unit:           | -         |
| Max.:    | 7     | Data Type:      | Int16     |
| Default: | 2     | Change:         | Real-time |

**Value Range:**

0: Coast to stop, keeping de-energized state

1: Ramp to stop as defined by 6084h/609Ah (HM), keeping de-energized state

2: Ramp to stop as defined by 6085h, keeping de-energized state

3: Stop at emergency stop torque, keeping de-energized state

5: Ramp to stop as defined by 6084h/609Ah (HM), keeping position lock state

6: Ramp to stop as defined by 6085h, keeping position lock state

7: Stop at emergency stop torque, keeping position lock state

**Description**

Defines the deceleration mode of the motor for stopping rotating upon quick stop and the motor status after stop.

Note: When the brake function is enabled and the value of 605Ah is lower than 4, the stop mode is forcibly set to "2: Ramp to stop as defined by 6085h, keeping de-energized state".

### 605Ch Stop mode at S-OFF

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 605Ch | Effective mode: | At stop   |
| Min.:    | -4    | Unit:           | -         |
| Max.:    | 2     | Data Type:      | Int16     |
| Default: | 0     | Change:         | Real-time |

#### Value Range:

- 4: Ramp to stop as defined by 6085h, keeping dynamic braking state
- 3: Stop at zero speed, keeping dynamic braking state
- 2: Ramp to stop as defined by 6084h/ 609Ah, keeping dynamic braking state
- 1: Dynamic braking stop, keeping dynamic braking state
- 0: Coast to stop, keeping de-energized state
- 1: Ramp to stop as defined by 6084h/ 609Ah, keeping de-energized state
- 2: Dynamic braking stop, keeping de-energized state

#### Description

Defines the deceleration mode of the motor for stopping rotating upon S-ON OFF and the motor status after stop.

Note: If the brake is enabled, 605Ch is forced to -4: Ramp to stop as defined by 6085h, keeping dynamic braking state.

### 605Dh Halt mode

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 605Dh | Effective mode: | At stop   |
| Min.:    | 1     | Unit:           | -         |
| Max.:    | 3     | Data Type:      | Int16     |
| Default: | 1     | Change:         | Real-time |

#### Value Range:

- 1: Ramp to stop as defined by 6084h/ 609Ah (HM), keeping position lock state
- 2: Ramp to stop as defined by 6085h, keeping position lock state
- 3: Stop at emergency stop torque, keeping position lock state

**Description**

Defines the deceleration mode of the motor for stopping rotating upon S-ON pause and the motor status after stop.

PP/PV/HM mode:

| Value | Stop Mode                                                                 |
|-------|---------------------------------------------------------------------------|
| 1     | Ramp to stop as defined by 6084h/609Ah (HM), keeping position lock status |
| 2     | Ramp to stop as defined by 6085h, keeping position lock status            |
| 3     | Stop at emergency-stop torque, keeping position lock status               |

PT mode:

| Value | Stop Mode                                                      |
|-------|----------------------------------------------------------------|
| 1/2/3 | Ramp to stop as defined by 6087h, keeping position lock status |

**605Eh****Stop mode at No. 2 fault**

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 605Eh | Effective mode: | At stop   |
| Min.:    | -5    | Unit:           | -         |
| Max.:    | 4     | Data Type:      | Int16     |
| Default: | 2     | Change:         | Real-time |

**Value Range:**

- 5: Stop at zero speed, keeping dynamic braking state
- 4: Stop at emergency stop torque, keeping dynamic braking state
- 3: Ramp to stop as defined by 6085h, keeping dynamic braking state
- 2: Ramp to stop as defined by 6084h/ 609Ah (HM), keeping dynamic braking state
- 1: Dynamic braking stop, keeping dynamic braking state
- 0: Coast to stop, keeping de-energized state
- 1: Ramp to stop as defined by 6084h/ 609Ah (HM), keeping de-energized state
- 2: Ramp to stop as defined by 6085h, keeping de-energized state
- 3: Stop at emergency stop torque, keeping de-energized state
- 4: Dynamic braking stop, keeping de-energized state

**Description**

Defines the deceleration mode of the servo motor for stopping rotating and the servo motor status when a No. 2 fault occurs.

Note: If the brake is enabled, 605Eh is forced to -3: Ramp to stop as defined by 6085h, keeping dynamic braking state.

**6060h****Servo drive mode**

|      |       |                 |           |
|------|-------|-----------------|-----------|
| Hex: | 6060h | Effective mode: | Real time |
|------|-------|-----------------|-----------|



|          |    |            |           |
|----------|----|------------|-----------|
| Min.:    | 0  | Unit:      | -         |
| Max.:    | 10 | Data Type: | UInt16    |
| Default: | 0  | Change:    | Real-time |

**Value Range:**

- 1: Profile position mode (pp)
- 3: Profile velocity mode (pv)
- 4: Profile torque mode (pt)
- 6: Homing mode (hm)
- 7: Interpolation mode (ip)

**Description**

It defines the operation mode of the servo drive.

0: N/A (internally forced to pp)

1: Profile position mode (pp)

3: Profile velocity mode (pv)

4: Profile torque mode (pt)

6: Homing mode (hm)

7: Interpolation mode (ip)

Other: N/A

If an unsupported operation mode is selected through an SDO, an SDO error will be returned.

If an unsupported operation mode is selected through a PDO, the change of the operation mode will be invalid.

**6061h      Operation mode display**

|          |       |                 |              |
|----------|-------|-----------------|--------------|
| Hex:     | 6061h | Effective mode: | -            |
| Min.:    | 0     | Unit:           | -            |
| Max.:    | 10    | Data Type:      | UInt16       |
| Default: | 0     | Change:         | Unchangeable |

**Value Range:**

- 1: Profile position mode (pp)
- 3: Profile velocity mode (pv)
- 4: Profile torque mode (pt)
- 6: Homing mode (hm)
- 7: Interpolation mode (ip)

**Description**

Indicates the actual operation mode.

0: Profile position mode (pp)

1: Profile position mode (pp)

3: Profile velocity mode (pv)

4: Profile torque mode (pt)

6: Homing mode (hm)

7: Interpolation mode (ip)

## 6062h

### Position reference

Hex: 6062h

Effective -

mode:

Min.: -2147483648

Unit: Reference unit

Max.: 2147483647

Data Type: Int32

Default: 0

Change: Unchangeable

### Value Range:

-2147483648 to 2147483647

### Description

Indicates the real-time position reference (reference unit).

## 6063h

### Position actual value

Hex: 6063h

Effective -

mode:

Min.: -2147483648

Unit: Pulse

Max.: 2147483647

Data Type: Int32

Default: 0

Change: Unchangeable

### Value Range:

-2147483648 to +2147483647

### Description

Indicates the absolute position feedback (encoder unit) of the motor in real time.

## 6064h

### Position actual value

Hex: 6064h

Effective -

mode:

Min.: -2147483648

Unit: Reference unit

Max.: 2147483647

Data Type: Int32

Default: 0

Change: Unchangeable

### Value Range:

-2147483648 to 2147483647

### Description

Indicates the absolute position feedback (reference unit) in real time.  
Position actual value in user-defined unit (6064h) x Gear ratio (6091h) = Position actual value in encoder unit (6063h)

**6065h      Following error window**

|          |            |                 |                |
|----------|------------|-----------------|----------------|
| Hex:     | 6065h      | Effective mode: | Real time      |
| Min.:    | 0          | Unit:           | Reference unit |
| Max.:    | 4294967295 | Data Type:      | UInt32         |
| Default: | 219895614  | Change:         | Real-time      |

**Value Range:**

0 to 4294967295

**Description**

Defines the threshold of excessive position deviation (reference unit).  
When the difference value between position demand value (6062h) and position actual value (6064h) keeps exceeding  $\pm 6065h$  after the time defined by 6066h elapses, B00.0 (Position deviation too large) occurs.

**6066h      Defines the time lapse to trigger excessive position deviation (EB00.0).**

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 6066h | Effective mode: | Real time |
| Min.:    | 0     | Unit:           | ms        |
| Max.:    | 65535 | Data Type:      | UInt16    |
| Default: | 0     | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Defines the time lapse to trigger excessive position deviation (EB00.0), which must be used together with 6065h.

**6067h      Position window**

|          |            |                 |                |
|----------|------------|-----------------|----------------|
| Hex:     | 6067h      | Effective mode: | Real time      |
| Min.:    | 0          | Unit:           | Reference unit |
| Max.:    | 4294967295 | Data Type:      | UInt32         |
| Default: | 46976      | Change:         | Real-time      |

**Value Range:**

0 to 4294967295

**Description**

Defines the threshold for position reach.

If the difference between 6062h and 6064h is within  $\pm 6067h$  and the time reaches 6068h, the position is reached. In this case, bit 10 of 6041h is set to 1 in the profile position mode.

This flag bit is valid only when the S-ON signal is valid in profile position control mode.

#### 6068h Position window time

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 6068h | Effective mode: | Real time |
| Min.:    | 0     | Unit:           | ms        |
| Max.:    | 65535 | Data Type:      | UInt16    |
| Default: | 0     | Change:         | Real-time |

##### Value Range:

0 ms to 65535 ms

##### Description

Defines the window time for position reach, which must be used together with 6067h.

#### 606Ch Actual speed

|          |             |                 |                  |
|----------|-------------|-----------------|------------------|
| Hex:     | 606Ch       | Effective mode: | -                |
| Min.:    | -2147483648 | Unit:           | Reference unit/s |
| Max.:    | 2147483647  | Data Type:      | Int32            |
| Default: | 0           | Change:         | Unchangeable     |

##### Value Range:

-2147483648 to +2147483647

##### Description

It indicates the velocity actual value.

#### 606Dh Velocity window

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 606Dh | Effective mode: | Real time |
| Min.:    | 0     | Unit:           | RPM       |
| Max.:    | 65535 | Data Type:      | UInt16    |
| Default: | 10    | Change:         | Real-time |

##### Value Range:

0 RPM to 65535 RPM

##### Description

Defines the threshold for speed reach.

If the difference value between the target speed 60FFh and the actual speed 606Ch is within  $\pm 606Dh$  and the time reaches 606Eh, the speed is reached and bit 10 of the status word 6041h is set to 1 in the profile velocity (PV) mode. This flag bit is meaningful only when the servo drive is enabled in PV mode.

**606Eh      Velocity window time**

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 606Eh | Effective mode: | Real time |
| Min.:    | 0     | Unit:           | ms        |
| Max.:    | 65535 | Data Type:      | UInt16    |
| Default: | 0     | Change:         | Real-time |

**Value Range:**

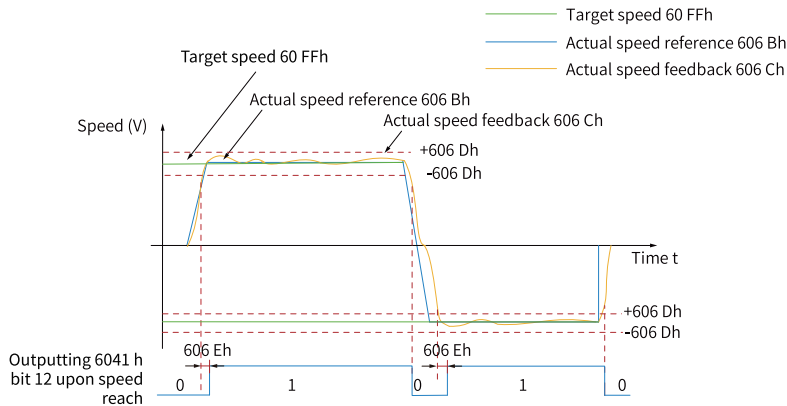
0 ms to 65535 ms

**Description**

Defines the time window for speed reach, which must be used together with 606Dh.

Defines the time window for speed arrival. If the difference value between the target speed 60FFh and the actual speed 606Ch is within  $\pm 606Dh$  and the time reaches 606Eh, the speed is reached and bit 10 of the status word 6041h is set to 1 in the profile velocity (PV) mode.

This flag bit is meaningful only when the servo drive is enabled in PV mode.



**606Fh      Zero speed signal threshold**

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 606Fh | Effective mode: | Real time |
| Min.:    | 0     | Unit:           | RPM       |
| Max.:    | 65535 | Data Type:      | UInt16    |
| Default: | 10    | Change:         | Real-time |

**Value Range:**

0 RPM to 65535 RPM

**Description**

Defines the threshold for determining whether the user velocity is 0.  
When 606Ch is within  $\pm 606Fh$  and the time reaches the value set by 6070h, the user velocity is 0. When either condition is not met, the user velocity is not 0.  
This flag bit is valid only in PV mode.  
This flag bit is unrelated to the enable/disable state of the servo drive.

**6070h Velocity threshold time**

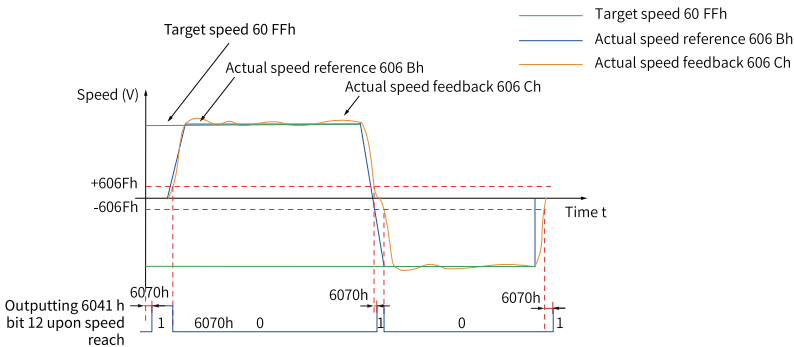
|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 6070h | Effective mode: | Real time |
| Min.:    | 0     | Unit:           | ms        |
| Max.:    | 65535 | Data Type:      | UInt16    |
| Default: | 0     | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Defines the time window for determining whether the user velocity is 0, which must be used together with 606Fh.  
When 606Ch is within  $\pm 606Fh$  and the time reaches the value set by 6070h, the user velocity is 0. When either condition is not met, the user velocity is not 0.  
This flag bit is valid only in PV mode.  
This flag bit is unrelated to the enable/disable state of the servo drive.



**6071h Target torque**

|       |       |                 |           |
|-------|-------|-----------------|-----------|
| Hex:  | 6071h | Effective mode: | Real time |
| Min.: | -4000 | Unit:           | 0.001     |
| Max.: | 4000  | Data Type:      | Int16     |

Default: 0

Change: Real-time

**Value Range:**

-4000—4000

**Description**

Defines the target torque of the servo drive in the profile torque mode.

The value 1000 corresponds to the rated torque of the motor.

**6072h****Max. torque reference**

Hex: 6072h

Effective mode: Real time

Min.: 0

Unit: 0.001

Max.: 4000

Data Type: UInt16

Default: 3500

Change: Real-time

**Value Range:**

0—4000

**Description**

Defines the maximum torque reference limit.

The value 1000 corresponds to the rated torque of the motor.

**6074h****Torque reference**

Hex: 6074h

Effective mode: -

Min.: -4000

Unit: 0.001

Max.: 4000

Data Type: Int16

Default: 0

Change: Unchangeable

**Value Range:**

-4000—4000

**Description**

Defines the target torque value.

The value 1000 corresponds to the rated torque of the motor.

**6077h****Actual torque**

Hex: 6077h

Effective mode: -

Min.: -4000

Unit: 0.001

Max.: 4000

Data Type: Int16

Default: 0

Change: Unchangeable

**Value Range:**

-4000—4000

**Description**

It displays the internal actual torque of the servo drive.  
The value 1000 corresponds to the rated torque of the motor.

**607Ah****Target position**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 607Ah       | Effective mode: | Real time      |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | 0           | Change:         | Real-time      |

**Value Range:**

-2147483648 to 2147483647

**Description**

Defines the target position of the servo drive in the profile position mode.

When bit 6 of 6040h is set to 0, 607Ah indicates the absolute target position of current segment.

After positioning of current segment is done, the value of 6064h will be the same as the value of 607Ah.

When bit 6 of 6040h is set to 1, 607Ah indicates the target increment displacement of current segment.

After positioning of current segment is done, user displacement increment will be the same as the value of 607Ah.

**607Ch****Home offset**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 607Ch       | Effective mode: | At stop        |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | 0           | Change:         | Real-time      |

**Value Range:**

-2147483648 to 2147483647

**Description**

Defines the physical location of mechanical zero that deviates from the home of the motor in position control modes (profile position mode, interpolation mode, and homing mode).

The home offset takes effect in the following conditions: The device is powered on, the homing operation is complete, and bit15 of 6041h is set to 1.

After homing is done, the position actual value (6064h) will be the same as the value of 607Ch.

If 607Ch is outside the value of 607Dh (Software position limit), E09.1 (Home setting error) will occur.



**607D.01h Min. position limit**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 607D-01h    | Effective mode: | Real time      |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | -2147483648 | Change:         | Real-time      |

**Value Range:**

-2147483648 to 2147483647

**Description**

Defines the minimum software position limit relative to the mechanical zero point.

Minimum software position limit = (607D.01h)

The software position limit is used to judge the absolute position. When homing is not performed, the internal software position limit is invalid.

The condition for activating the software position limit is set in H0A.01 (object dictionary 0x200A.02h).

**607D.02h Max. position limit**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 607D-02h    | Effective mode: | Real time      |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | 2147483647  | Change:         | Real-time      |

**Value Range:**

-2147483648 to 2147483647

**Description**

Defines the maximum software position limit relative to the mechanical zero.

Maximum software position limit = (607D.02h)

**607Eh Reference polarity**

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 607Eh | Effective mode: | Real time |
| Min.:    | 0     | Unit:           | -         |
| Max.:    | 255   | Data Type:      | UInt16    |
| Default: | 0     | Change:         | Real-time |

**Value Range:**

0–255

**Description**

Defines the polarity of position or speed references.

When bit 7 is 1, it indicates the position reference is multiplied by "–1" and the motor direction is reversed in the standard position mode or interpolation mode.

When bit 6 is 1, it indicates the speed reference (60FFh) is multiplied by "-1" and the motor direction is reversed in the speed mode.

When bit 5 is 1, it indicates the torque demand value (6071h) is multiplied by "-1" and the motor direction is reversed in the torque mode.

Other bits are meaningless.

**607Fh****Max. speed**

|          |            |                 |                  |
|----------|------------|-----------------|------------------|
| Hex:     | 607Fh      | Effective mode: | Real time        |
| Min.:    | 0          | Unit:           | Reference unit/s |
| Max.:    | 4294967295 | Data Type:      | UInt32           |
| Default: | 4294967295 | Change:         | Real-time        |

**Value Range:**

0 to 4294967295

**Description**

Defines the maximum user running speed.

Set a proper gear ratio (8:1 recommended) when using a 26-bit encoder.

Otherwise, the motor speed will be limited to 3840 RPM.

**6081h****Profile velocity**

|          |            |                 |                  |
|----------|------------|-----------------|------------------|
| Hex:     | 6081h      | Effective mode: | Real time        |
| Min.:    | 0          | Unit:           | Reference unit/s |
| Max.:    | 4294967295 | Data Type:      | UInt32           |
| Default: | 111848106  | Change:         | Real-time        |

**Value Range:**

0 to 4294967295

**Description**

It sets the average velocity normally attained at the end of the acceleration ramp during a profiled motion.

The setpoint takes effect after the slave receives the displacement reference.

**6083h****Profile acceleration**

|          |            |                 |                               |
|----------|------------|-----------------|-------------------------------|
| Hex:     | 6083h      | Effective mode: | Real time                     |
| Min.:    | 0          | Unit:           | Reference unit/s <sup>2</sup> |
| Max.:    | 4294967295 | Data Type:      | UInt32                        |
| Default: | 4294967295 | Change:         | Real-time                     |

**Value Range:**

0 to 4294967295

**Description**

Defines the acceleration rate in the acceleration stage of the displacement reference in the profile position mode.

The following formula applies if a motor equipped with 23-bit encoder needs to run at 400 RPM (6081h:  $400 \times 8388608/60$ ) with acceleration rate being 400 RPM/s (6083h:  $400 \times 8388608/60$ ) and deceleration rate being 200 RPM/s (6084h:  $200 \times 8388608/60$ ) under a gear ratio of 1:1:

Acceleration time  $t_{up} = \Delta 6081h / \Delta 6083h = 1$  (s); Deceleration time  $t_{down} = \Delta 6081h / \Delta 6084h = 2$  (s).

**6084h****Profile deceleration**

|          |            |                 |                               |
|----------|------------|-----------------|-------------------------------|
| Hex:     | 6084h      | Effective mode: | Real time                     |
| Min.:    | 0          | Unit:           | Reference unit/s <sup>2</sup> |
| Max.:    | 4294967295 | Data Type:      | UInt32                        |
| Default: | 4294967295 | Change:         | Real-time                     |

**Value Range:**

0 to 4294967295

**Description**

Defines the deceleration rate in the deceleration stage of the displacement reference in the profile position mode.

The following formula applies if a motor equipped with 23-bit encoder needs to run at 400 RPM (6081h:  $400 \times 8388608/60$ ) with acceleration rate being 400 RPM/s (6083h:  $400 \times 8388608/60$ ) and deceleration rate being 200 RPM/s (6084h:  $200 \times 8388608/60$ ) under a gear ratio of 1:1:

Acceleration time  $t_{up} = \Delta 6081h / \Delta 6083h = 1$  (s); Deceleration time  $t_{down} = \Delta 6081h / \Delta 6084h = 2$  (s).

**6085h****Quick stop deceleration**

|          |            |                 |                               |
|----------|------------|-----------------|-------------------------------|
| Hex:     | 6085h      | Effective mode: | Real time                     |
| Min.:    | 0          | Unit:           | Reference unit/s <sup>2</sup> |
| Max.:    | 4294967295 | Data Type:      | UInt32                        |
| Default: | 2147483647 | Change:         | Real-time                     |

**Value Range:**

0 to 4294967295

**Description**

Defines the deceleration rate when the quick stop command (6040h = 0x0002) is active and 605Ah (Quick stop option code) is set to 2 or 5.

**6087h****Torque slope**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 6087h      | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | 0.1%/s    |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 4294967295 | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

It sets the rate of change of torque in profile torque mode, in unit of torque increment per second.

In the profile torque mode, if 605Ah is set to 1, 2, 5, or 6, or 605Dh is set to 1 or 2, the servo drive decelerates to stop as defined by 6087h.

If the value exceeds the torque reference limit, the servo drive runs at the limit.

**6091.01h****Motor resolution**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 6091-01h   | Effective mode: | Real time |
| Min.:    | 1          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 1          | Change:         | At stop   |

**Value Range:**

1–4294967295

**Description**

Defines the numerator of the gear ratio.

Defines the proportional relation between the load shaft displacement designated by the user and the motor shaft displacement.

The relation between motor position feedback (encoder unit) and load shaft position feedback (reference unit) is as follows.

Motor position feedback = Load shaft position feedback x Gear ratio

The relation between the motor speed (RPM) and the load shaft speed (reference unit/s) is as follows:

Motor speed (RPM) = Load shaft speed \* 6091h \* 60/Encoder resolution

The motor acceleration (RPM/ms) and the load shaft acceleration (reference unit/s<sup>2</sup>) is in the following relationship:

Motor acceleration (RPM/ms) = Load shaft acceleration \* 6091h \* 1000 / Encoder resolution / 60

**6091.02h****Shaft resolution**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 6091-02h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

Min.: 1 Unit: -  
 Max.: 4294967295 Data Type: UInt32  
 Default: 1 Change: At stop

**Value Range:**

1–4294967295

**Description**

Defines the denominator of the gear ratio.

**6098h****Homing method**

Hex: 6098h Effective Real time  
 mode:  
 Min.: -3 Unit: -  
 Max.: 35 Data Type: Int8  
 Default: 1 Change: Real-time

**Value Range:**

-3–35

**Description**

Table 2–8 Description of homing method

| Value | Description                                                                                                                                                 |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -3    | Nearby, Z signal as home                                                                                                                                    |
| -2    | Forward, positive mechanical limit as deceleration point and Z signal as home                                                                               |
| -1    | Reverse, negative mechanical limit as deceleration point and Z signal as home                                                                               |
| 1     | Reverse, negative limit switch as deceleration point and Z signal as home, falling edge of the negative limit switch signal must be reached before Z signal |
| 2     | Forward, positive limit switch as deceleration point and Z signal as home, falling edge of positive limit switch signal must be reached before Z signal     |
| 3     | Forward, home switch as deceleration point and Z signal as home, falling edge on the same side of the home switch signal must be reached before Z signal    |
| 4     | Forward, home switch as deceleration point and Z signal as home, rising edge on the same side of the home switch signal must be reached before Z signal     |
| 5     | Reverse, home switch as deceleration point and Z signal as home, falling edge on the same side of the home switch signal must be reached before Z signal    |
| 6     | Reverse, home switch as deceleration point and Z signal as home, rising edge on the same side of the home switch signal must be reached before Z signal     |
| 7     | Forward, home switch as deceleration point and Z signal as home, falling edge on the same side of the home switch signal must be reached before Z signal    |
| 8     | Forward, home switch as deceleration point and Z signal as home, rising edge on the same side of the home switch signal must be reached before Z signal     |
| 9     | Forward, home switch as deceleration point and Z signal as home, rising edge on the other side of the home switch signal must be reached before Z signal    |

| Value                                                                                                               | Description                                                                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10                                                                                                                  | Forward, home switch as deceleration point and Z signal as home, falling edge on the other side of the home switch signal must be reached before Z signal                                             |
| 11                                                                                                                  | Reverse, home switch as deceleration point and Z signal as home, falling edge on the same side of the home switch signal must be reached before Z signal                                              |
| 12                                                                                                                  | Reverse, home switch as deceleration point and Z signal as home, rising edge on the same side of the home switch signal must be reached before Z signal                                               |
| 13                                                                                                                  | Reverse, home switch as deceleration point and Z signal on the other side of the home switch signal as home, rising edge on the other side of the home switch signal must be reached before Z signal  |
| 14                                                                                                                  | Reverse, home switch as deceleration point and Z signal on the other side of the home switch signal as home, falling edge on the other side of the home switch signal must be reached before Z signal |
| 17–32                                                                                                               | Similar to setpoints 1...14 except that the deceleration point coincide with the home                                                                                                                 |
| 33                                                                                                                  | Reverse, Z signal as home                                                                                                                                                                             |
| 34                                                                                                                  | Forward, Z signal as home                                                                                                                                                                             |
| 35                                                                                                                  | Current position as home                                                                                                                                                                              |
| When 6098h is set to 15, 16, 31 or 32, it is meaningless and the servo drive does not perform the homing operation. |                                                                                                                                                                                                       |

**6099.01h Speed during search for switch**

|          |            |                 |                  |
|----------|------------|-----------------|------------------|
| Hex:     | 6099-01h   | Effective mode: | Real time        |
| Min.:    | 0          | Unit:           | Reference unit/s |
| Max.:    | 4294967295 | Data Type:      | UInt32           |
| Default: | 111848106  | Change:         | At stop          |

**Value Range:**

0 to 4294967295

**Description**

Defines the speed during search for the deceleration point signal. A large setpoint helps prevent E601.0 (Homing timeout).

**6099.02h Speed during search for zero**

|          |            |                 |                  |
|----------|------------|-----------------|------------------|
| Hex:     | 6099-02h   | Effective mode: | Real time        |
| Min.:    | 0          | Unit:           | Reference unit/s |
| Max.:    | 4294967295 | Data Type:      | UInt32           |
| Default: | 11184810   | Change:         | At stop          |

**Value Range:**

0 to 4294967295

**Description**

Defines the speed in searching for the home signal. Setting this speed to a low value prevents overshoot during stop at high speed, avoiding excessive deviation between the stop position and the set mechanical home.

**609Ah Homing acceleration**

|          |            |                 |                               |
|----------|------------|-----------------|-------------------------------|
| Hex:     | 609Ah      | Effective mode: | Real time                     |
| Min.:    | 0          | Unit:           | Reference unit/s <sup>2</sup> |
| Max.:    | 4294967295 | Data Type:      | UInt32                        |
| Default: | 4294967295 | Change:         | Real-time                     |

**Value Range:**  
0 to 4294967295

**Description**

It sets the acceleration during the homing operation.

**60B8h Touch probe function**

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 60B8h | Effective mode: | Real time |
| Min.:    | 0     | Unit:           | -         |
| Max.:    | 65535 | Data Type:      | UInt16    |
| Default: | 0     | Change:         | Real-time |

**Value Range:**  
0–65535

**Description**

See the following table for descriptions of each bit of 60B8h.

| bit   | Name                                                                                                                                  | Description                                                                                                                                                                                                                                                                     |
|-------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0     | Touch probe 1 function selection<br>0: Probe 1 disabled<br>1: Probe 1 enabled                                                         | Bit0 to bit5: settings related to probe 1<br>When a DI is used to trigger the touch probe function, the DI source cannot be changed once the touch probe function is enabled.<br>For absolute encoders, Z signal refers to the zero point of the single-turn position feedback. |
| 1     | Touch probe 1 trigger mode<br>0: Single trigger mode (Latches the position at the first trigger event.)<br>1: Continuous trigger mode |                                                                                                                                                                                                                                                                                 |
| 2     | Touch probe 1 trigger signal selection<br>0: DI signal<br>1: Z signal                                                                 |                                                                                                                                                                                                                                                                                 |
| 3     | N/A                                                                                                                                   |                                                                                                                                                                                                                                                                                 |
| 4     | Touch probe 1 positive edge<br>0: Latching at positive edge disabled<br>1: Latching at positive edge enabled                          |                                                                                                                                                                                                                                                                                 |
| 5     | Touch probe 1 negative edge<br>0: Latching at negative edge disabled<br>1: Latching at negative edge enabled                          |                                                                                                                                                                                                                                                                                 |
| 6–7   | N/A                                                                                                                                   | -                                                                                                                                                                                                                                                                               |
| 8     | Touch probe 2 function selection<br>0: Probe 2 disabled<br>1: Probe 2 enabled                                                         | Bit8 to bit13: settings related to probe 2                                                                                                                                                                                                                                      |
| 9     | Touch probe 2 trigger mode<br>0: Single trigger mode (Latches the position at the first trigger event.)<br>1: Continuous trigger mode |                                                                                                                                                                                                                                                                                 |
| 10    | Touch probe 2 trigger signal selection<br>0: DI signal<br>1: Z signal                                                                 |                                                                                                                                                                                                                                                                                 |
| 11    | N/A                                                                                                                                   |                                                                                                                                                                                                                                                                                 |
| 12    | Touch probe 2 positive edge<br>0: Latching at positive edge disabled<br>1: Latching at positive edge enabled                          |                                                                                                                                                                                                                                                                                 |
| 13    | Touch probe 2 negative edge<br>0: Latching at negative edge disabled<br>1: Latching at negative edge enabled                          |                                                                                                                                                                                                                                                                                 |
| 14–15 | N/A                                                                                                                                   | -                                                                                                                                                                                                                                                                               |

**60B9h****Touch probe status**

Hex: 60B9h

Effective mode: -

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: Unchangeable



**Value Range:**

0–65535

**Description**

Defines the functions of touch probe 1 and touch probe 2.

See the following table for descriptions of each bit of 60B9h.

| bit   | Name                                                                                                              | Description                                                                                                             |
|-------|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| 0     | Touch probe 1 function selection<br>0: Probe 1 disabled<br>1: Probe 1 enabled                                     | Bit0 to bit2: Status of probe 1                                                                                         |
| 1     | Touch probe 1 positive edge value<br>0: No positive edge value latched<br>1: Edge value latched                   |                                                                                                                         |
| 2     | Touch probe 1 negative edge value<br>0: No negative edge value latched<br>1: Negative edge value latched          |                                                                                                                         |
| 3–5   | N/A                                                                                                               | -                                                                                                                       |
| 6–7   | When the function of probe 1 is selected as continuous sampling, the total number of times the probe is triggered | When the function of probe 1 is selected as continuous sampling, the total number of times (0–3) the probe is triggered |
| 8     | Probe 2 enable:<br>0: Probe 2 disabled<br>1: Probe 2 enabled                                                      | Bit8 to bit10: Status of probe 2                                                                                        |
| 9     | Touch probe 2 positive edge value<br>0: No positive edge value latched<br>1: Edge value latched                   |                                                                                                                         |
| 10    | Touch probe 2 negative edge value<br>0: No negative edge value latched<br>1: Negative edge value latched          |                                                                                                                         |
| 11–13 | N/A                                                                                                               | -                                                                                                                       |
| 14–15 | When the function of probe 2 is selected as continuous sampling, the total number of times the probe is triggered | When the function of probe 2 is selected as continuous sampling, the total number of times (0–3) the probe is triggered |

**60BAh****Touch probe 1 positive edge position value**

Hex: 60BAh

Effective -

mode:

Min.: -2147483648

Unit: Reference unit

Max.: 2147483647

Data Type: Int32

Default: 0

Change: Unchangeable

**Value Range:**

-2147483648 to 2147483647

### Description

Indicates the position feedback value (reference unit) latched at positive edge of touch probe 1 signal.

## 60BBh

### Touch probe 1 negative edge position value

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 60BBh       | Effective mode: | -              |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | 0           | Change:         | Unchangeable   |

### Value Range:

-2147483648 to 2147483647

### Description

Indicates the position feedback value (reference unit) latched at negative edge of touch probe 1 signal.

## 60BCh

### Touch probe 2 positive edge position value

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 60BCh       | Effective mode: | -              |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | 0           | Change:         | Unchangeable   |

### Value Range:

-2147483648 to 2147483647

### Description

Indicates the position feedback value (reference unit) latched at positive edge of touch probe 2 signal.

## 60BDh

### Touch probe 2 negative edge position value

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 60BDh       | Effective mode: | -              |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | 0           | Change:         | Unchangeable   |

### Value Range:

-2147483648 to 2147483647

### Description

Indicates the position feedback value (reference unit) latched at negative edge of touch probe 2 signal.

**60C1.01h Interpolation displacement**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 60C1-01h    | Effective mode: | Real time      |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | UInt32         |
| Default: | 0           | Change:         | Real-time      |

**Value Range:**

-2147483648 to 2147483647

**Description**

Defines the displacement reference in the interpolation mode.

In interpolation mode, 60C1.01h must be set to synchronize PDO and the transmission type must be set to 1.

The host controller will send a displacement reference to the slave upon every synchronization cycle.

**60C2.01h Interpolation time period**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 60C2-01h | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 20       | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

1–20

**Description**

Defines the interpolation time units.

The allowed sync period range is 1 ms to 20 ms. When a value beyond this range is set, the setpoint is used as the sync period.

The synchronization cycle must be set after the servo drive stops running.

**60C2.02h Interpolation time units**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 60C2-02h | Effective mode: | Real time |
| Min.:    | -3       | Unit:           | -         |
| Max.:    | -3       | Data Type:      | Int8      |
| Default: | -3       | Change:         | Real-time |

**Value Range:**

-3—3

**Description**

Defines the interpolation period time unit.

The value "-3" indicates the unit ms. Therefore, the actual interpolation period (ms) is the value of 60C2.01h.

**60C5h Max. acceleration**

|          |            |                 |                               |
|----------|------------|-----------------|-------------------------------|
| Hex:     | 60C5h      | Effective mode: | Real time                     |
| Min.:    | 0          | Unit:           | Reference unit/s <sup>2</sup> |
| Max.:    | 4294967295 | Data Type:      | UInt32                        |
| Default: | 4294967295 | Change:         | Real-time                     |

**Value Range:**

0 to 4294967295

**Description**

Defines the maximum permissible acceleration rate of the acceleration segment in the profile position mode, profile velocity mode, and homing mode.

The setpoint 0 will be forcibly changed to 1.

**60C6h Max. deceleration**

|          |            |                 |                               |
|----------|------------|-----------------|-------------------------------|
| Hex:     | 60C6h      | Effective mode: | Real time                     |
| Min.:    | 0          | Unit:           | Reference unit/s <sup>2</sup> |
| Max.:    | 4294967295 | Data Type:      | UInt32                        |
| Default: | 4294967295 | Change:         | Real-time                     |

**Value Range:**

0 to 4294967295

**Description**

Defines the maximum permissible deceleration in the profile position mode, profile velocity mode, and homing mode.

The setpoint 0 will be forcibly changed to 1.

**60D5h Touch probe 1 positive edge counter**

|          |       |                 |              |
|----------|-------|-----------------|--------------|
| Hex:     | 60D5h | Effective mode: | -            |
| Min.:    | 0     | Unit:           | -            |
| Max.:    | 65535 | Data Type:      | UInt16       |
| Default: | 0     | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

The counting value is added by "1" each time this object is triggered.

**60D6h Touch probe 1 negative edge counter**

|       |       |                 |   |
|-------|-------|-----------------|---|
| Hex:  | 60D6h | Effective mode: | - |
| Min.: | 0     | Unit:           | - |

|          |       |            |              |
|----------|-------|------------|--------------|
| Max.:    | 65535 | Data Type: | UInt16       |
| Default: | 0     | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

The counting value is added by "1" each time this object is triggered.

**60D7h Touch probe 2 positive edge counter**

|          |       |                 |              |
|----------|-------|-----------------|--------------|
| Hex:     | 60D7h | Effective mode: | -            |
| Min.:    | 0     | Unit:           | -            |
| Max.:    | 65535 | Data Type:      | UInt16       |
| Default: | 0     | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

The counting value is added by "2" each time this object is triggered.

**60D8h Touch probe 2 negative edge counter**

|          |       |                 |              |
|----------|-------|-----------------|--------------|
| Hex:     | 60D8h | Effective mode: | -            |
| Min.:    | 0     | Unit:           | -            |
| Max.:    | 65535 | Data Type:      | UInt16       |
| Default: | 0     | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

The counting value is added by "2" each time this object is triggered.

**60E0h Positive torque limit**

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 60E0h | Effective mode: | Real time |
| Min.:    | 0     | Unit:           | 0.001     |
| Max.:    | 4000  | Data Type:      | UInt16    |
| Default: | 3500  | Change:         | Real-time |

**Value Range:**

0–4000

**Description**

It sets the maximum positive torque in the motor.

**60E1h Negative torque limit**

|          |       |            |           |
|----------|-------|------------|-----------|
| Hex:     | 60E1h | Effective  | Real time |
|          |       | mode:      |           |
| Min.:    | 0     | Unit:      | 0.001     |
| Max.:    | 4000  | Data Type: | UInt16    |
| Default: | 3500  | Change:    | Real-time |

**Value Range:**

0–4000

**Description**

It sets the maximum negative torque in the motor.

**60F4h Position deviation**

|          |             |            |                |
|----------|-------------|------------|----------------|
| Hex:     | 60F4h       | Effective  | -              |
|          |             | mode:      |                |
| Min.:    | -2147483648 | Unit:      | Reference unit |
| Max.:    | 2147483647  | Data Type: | Int32          |
| Default: | 0           | Change:    | Unchangeable   |

**Value Range:**

-2147483648 to 2147483647

**Description**

Indicates the position deviation (reference unit).

**60FCh Position reference**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 60FCh       | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | -2147483648 | Unit:      | p            |
| Max.:    | 2147483647  | Data Type: | Int32        |
| Default: | 0           | Change:    | Unchangeable |

**Value Range:**

-2147483648p to 2147483647p

**Description**

Indicates the position reference (encoder unit).

If no warning is detected when the S-ON signal is active, the relation between the position reference in reference unit and that in encoder unit is as follows:

$$60FCh \text{ (in encoder unit)} = 6062h \text{ (in reference unit)} \times 6091h$$
**60FDh DI state**

|          |            |            |              |
|----------|------------|------------|--------------|
| Hex:     | 60FDh      | Effective  | -            |
|          |            | mode:      |              |
| Min.:    | 0          | Unit:      | -            |
| Max.:    | 4294967295 | Data Type: | UInt32       |
| Default: | 0          | Change:    | Unchangeable |

**Value Range:**

0–4294967295

**Description**

Indicates current DI logic of the drive.

0: Inactive

1: Active

The signal indicated by each bit is described as follows:

| bit   | Function                  |
|-------|---------------------------|
| 0     | Reverse overtravel active |
| 1     | Forward overtravel active |
| 2     | Home signal active        |
| 3–15  | N/A                       |
| 16    | DI1 input active          |
| 17    | DI2 input active          |
| 18    | DI3 input active          |
| 19    | DI4 input active          |
| 20    | DI5 input active          |
| 21    | DI6 input active          |
| 22    | DI7 input active          |
| 23    | DI8 input active          |
| 24–26 | N/A                       |
| 27    | STO1 signal input         |
| 28    | STO2 signal input         |
| 29    | EDM output active         |
| 30    | Z signal active           |
| 31    | N/A                       |

**60FFh****PV target velocity**

Hex: 60FFh

Effective Real time  
mode:

Min.: -2147483648

Unit: Reference unit/s

Max.: 2147483647

Data Type: Int32

Default: 0

Change: Real-time

**Value Range:**

–2147483648 to +2147483647

**Description**

Defines the target speed in the profile velocity mode.

**60FE.01h Physical output**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 60FE-01h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

Indicates the DO logic.

The signal indicated by each bit is described as follows:

| bit   | Description                                                                                                  |
|-------|--------------------------------------------------------------------------------------------------------------|
| 0–15  | N/A                                                                                                          |
| 16    | Forced DO1 output (0: OFF; 1: ON) only when function 31 is assigned to DO and bit 16 of 60FE.02h is set to 1 |
| 17    | Forced DO2 output (0: OFF; 1: ON) only when function 31 is assigned to DO and bit 17 of 60FE.02h is set to 1 |
| 18    | Forced DO3 output (0: OFF; 1: ON) only when function 31 is assigned to DO and bit 18 of 60FE.02h is set to 1 |
| 19    | Forced DO4 output (0: OFF; 1: ON) only when function 31 is assigned to DO and bit 19 of 60FE.02h is set to 1 |
| 20    | Forced DO5 output (0: OFF; 1: ON) only when function 31 is assigned to DO and bit 20 of 60FE.02h is set to 1 |
| 21–25 | N/A                                                                                                          |
| 26    | Switched between P and PI for gain switchover only when bit 26 of 60FE.02h is set to 1                       |
| 27–31 | N/A                                                                                                          |

**60FE.02h Bitmask**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 60FE-02h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295



**Description**

0 to 15: N/A

16: Forced DO1 output enable

17: Forced DO2 output enable

18: Forced DO3 output enable

19: Forced DO4 output enable

20: Forced DO5 output enable

19 to 25: N/A

26: P/PI switchover enable

27 to 31: N/A

### 3 Parameter List [N]

The mapping relation between the parameter displayed on the keypad (in decimal) and the object dictionary operated by the host controller (in hexadecimal, "Index" and "Sub-index") is as follows.

Object dictionary index = 0x2000 + Parameter group number

Object dictionary sub-index = Hexadecimal offset within the parameter group + 1 For example:

| Panel Display | Object dictionary operated by the host controller |
|---------------|---------------------------------------------------|
| H02.15        | 2002.10h                                          |

#### Note

The following section only describes the display and parameter settings on the keypad side (in decimal), which are different from those displayed in the software tool (in hexadecimal). Make necessary value conversions during use.

#### 3.1 H00 Servo Motor Parameters

| Parameter | Communication Address | Name                   | Value                                                      | Default | Unit | Change Mode  | Page                                      |
|-----------|-----------------------|------------------------|------------------------------------------------------------|---------|------|--------------|-------------------------------------------|
| H00.00    | 2000-01h              | Motor SN               | See " <a href="#">H00_en.00</a> " on page 650 for details. | 14102   | -    | At stop      | " <a href="#">H00_en.00</a> " on page 650 |
| H00.02    | 2000-03h              | Customized No.         | 0.00–4294967295.00                                         | 0.00    | -    | Unchangeable | " <a href="#">H00_en.02</a> " on page 651 |
| H00.04    | 2000-05h              | Encoder version        | 0.0–6553.5                                                 | 0.0     | -    | Unchangeable | " <a href="#">H00_en.04</a> " on page 652 |
| H00.05    | 2000-06h              | Serial-type motor code | 0–65535                                                    | 0       | -    | Unchangeable | " <a href="#">H00_en.05</a> " on page 652 |
| H00.06    | 2000-07h              | FPGA customized SN     | 0.00–655.35                                                | 0.00    | -    | Unchangeable | " <a href="#">H00_en.06</a> " on page 652 |
| H00.07    | 2000-08h              | STO version            | 0.0–6553.5                                                 | 0.0     | -    | Unchangeable | " <a href="#">H00_en.07</a> " on page 652 |
| H00.08    | 2000-09h              | Bus encoder type       | 0–65535                                                    | 0       | -    | At stop      | " <a href="#">H00_en.08</a> " on page 653 |

| Parameter | Communication Address | Name                                  | Value                                                                                                                                          | Default | Unit                | Change Mode  | Page                    |
|-----------|-----------------------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------|--------------|-------------------------|
| H00.14    | 2000-0Fh              | Rated speed                           | 50[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                                                               | 3000    | [mm/s]/[rpm]        | At stop      | "H00_en.14" on page 653 |
| H00.15    | 2000-10h              | Maximum speed                         | 50[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                                                               | 6000    | [mm/s]/[rpm]        | At stop      | "H00_en.15" on page 653 |
| H00.18    | 2000-13h              | Stator resistance                     | 0.001Ω to 65.535Ω                                                                                                                              | 0.500   | Ω                   | At stop      | "H00_en.18" on page 653 |
| H00.19    | 2000-14h              | Stator inductance Lq                  | 0.01mH to 655.35mH                                                                                                                             | 3.27    | mH                  | At stop      | "H00_en.19" on page 654 |
| H00.20    | 2000-15h              | Stator inductance Ld                  | 0.01mH to 655.35mH                                                                                                                             | 3.87    | mH                  | At stop      | "H00_en.20" on page 654 |
| H00.22    | 2000-17h              | Torque coefficient Kt                 | 0.01[N/Arms]/[N·m/Arms]–655.35[N/Arms]/[N·m/Arms]                                                                                              | 0.51    | [N/Arms]/[N·m/Arms] | At stop      | "H00_en.22" on page 654 |
| H00.40    | 2000-29h              | Motor control type                    | 0: General-purpose rotary motor (ROT)<br>1: Direct drive rotary motor (DDR)<br>2: Direct drive linear motor (DDL)<br>3: Voice coil motor (VOL) | 2       | -                   | Real-time    | "H00_en.40" on page 655 |
| H00.41    | 2000-2Ah              | Master encoder configuration          | 0: CN2<br>1: CN7                                                                                                                               | 1       | -                   | Unchangeable | "H00_en.41" on page 655 |
| H00.43    | 2000-2Ch              | BISS/SSI/ENDAT data length            | 0–40                                                                                                                                           | 32      | -                   | At stop      | "H00_en.43" on page 655 |
| H00.44    | 2000-2Dh              | Number of BiSS-C/SSI fault bits       | 0–31                                                                                                                                           | 2       | -                   | At stop      | "H00_en.44" on page 656 |
| H00.45    | 2000-2Eh              | Encoder pitch 1                       | 0.01[mm]/[deg]–655.35[mm]/[deg]                                                                                                                | 2.00    | [mm]/[deg]          | At stop      | "H00_en.45" on page 656 |
| H00.46    | 2000-2Fh              | Encoder pitch 2                       | 0.01[mm]/[deg]–655.35[mm]/[deg]                                                                                                                | 0.50    | [mm]/[deg]          | At stop      | "H00_en.46" on page 656 |
| H00.47    | 2000-30h              | Encoder Type                          | 0: Optical scale<br>1: Magnetic scale                                                                                                          | 0       | -                   | At stop      | "H00_en.47" on page 656 |
| H00.48    | 2000-31h              | Linear motor pole pitch (N-S)         | 0.00 mm–655.35 mm                                                                                                                              | 16.00   | mm                  | At stop      | "H00_en.48" on page 657 |
| H00.49    | 2000-32h              | Direct drive motor encoder resolution | 0.000um/p–65.535um/p                                                                                                                           | 1.000   | um/p                | At stop      | "H00_en.49" on page 657 |
| H00.54    | 2000-37h              | BISS/SSI CRC                          | 0–1                                                                                                                                            | 1       | -                   | At stop      | "H00_en.54" on page 657 |

| Parameter | Communication Address | Name                        | Value                                                                                     | Default | Unit                                | Change Mode | Page                                                       |
|-----------|-----------------------|-----------------------------|-------------------------------------------------------------------------------------------|---------|-------------------------------------|-------------|------------------------------------------------------------|
| H00.55    | 2000-38h              | Rated torque                | 0.00[N]/<br>[N·m]—42949672.95[N]/[N·m]                                                    | 2.00    | [N]/<br>[N·m]                       | At stop     | <a href="#">"H00_en.55"</a><br><a href="#">on page 658</a> |
| H00.57    | 2000-3Ah              | Max. torque                 | 0.00[N]/<br>[N·m]—42949672.95[N]/[N·m]                                                    | 7.00    | [N]/<br>[N·m]                       | At stop     | <a href="#">"H00_en.57"</a><br><a href="#">on page 658</a> |
| H00.59    | 2000-3Ch              | Encoder counting direction  | 0: Forward<br>1: Reverse                                                                  | 0       | -                                   | At stop     | <a href="#">"H00_en.59"</a><br><a href="#">on page 658</a> |
| H00.63    | 2000-40h              | Maximum motor current       | 0.00 A—65535.00 A                                                                         | 3.00    | A                                   | At stop     | <a href="#">"H00_en.63"</a><br><a href="#">on page 658</a> |
| H00.65    | 2000-42h              | Motor rated current         | 0.00 A—65535.00 A                                                                         | 1.00    | A                                   | At stop     | <a href="#">"H00_en.65"</a><br><a href="#">on page 659</a> |
| H00.67    | 2000-44h              | Moment of inertia           | 0.00000[g]/<br>[0.00001kgcm <sup>2</sup> ]—42949.67295[g]/<br>[0.00001kgcm <sup>2</sup> ] | 0.00001 | [g]/<br>[0.00001kgcm <sup>2</sup> ] | At stop     | <a href="#">"H00_en.67"</a><br><a href="#">on page 659</a> |
| H00.69    | 2000-46h              | Linear back EMF coefficient | 0.00[V/(m/s)]/[100mV/rpm]—42949672.95[V/(m/s)]/[100mV/rpm]                                | 33.00   | [V/(m/s)]/[100mV/rpm]               | At stop     | <a href="#">"H00_en.69"</a><br><a href="#">on page 659</a> |

## 3.2 H01 Servo Drive Parameters

| Parameter | Communication Address | Name                   | Value      | Default | Unit | Change Mode  | Page                                                       |
|-----------|-----------------------|------------------------|------------|---------|------|--------------|------------------------------------------------------------|
| H01.00    | 2001-01h              | MCU software version   | 0.0—6553.5 | 0.0     | -    | Unchangeable | <a href="#">"H01_en.00"</a><br><a href="#">on page 660</a> |
| H01.01    | 2001-02h              | FPGA software version  | 0.0—6553.5 | 0.0     | -    | Unchangeable | <a href="#">"H01_en.01"</a><br><a href="#">on page 660</a> |
| H01.02    | 2001-03h              | Servo drive series No. | 0—65535    | 0       | -    | Unchangeable | <a href="#">"H01_en.02"</a><br><a href="#">on page 660</a> |
| H01.06    | 2001-07h              | Board software version | 0.0—6553.5 | 0.0     | -    | Unchangeable | <a href="#">"H01_en.06"</a><br><a href="#">on page 660</a> |

| Parameter | Communication Address | Name                                     | Value                                                                                                                                                                                          | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|--------------|-----------------------------------------|
| H01.10    | 2001-0Bh              | Drive series No.                         | 2: S1R6<br>3: S2R8<br>5: S5R5<br>6: S7R6<br>7: S012<br>8: S018<br>9: S022<br>10: S027<br>10001: T3R5<br>10002: T5R4<br>10003: T8R4<br>10004: T012<br>10005: T017<br>10006: T021<br>10007: T026 | 3       | -    | At stop      | <a href="#">"H01_en.10" on page 661</a> |
| H01.11    | 2001-0Ch              | DC-AC voltage class                      | 0 V–65535 V                                                                                                                                                                                    | 220     | V    | Unchangeable | <a href="#">"H01_en.11" on page 661</a> |
| H01.12    | 2001-0Dh              | Drive rated power                        | 0.00 kW–42949672.95kW                                                                                                                                                                          | 0.40    | kW   | Unchangeable | <a href="#">"H01_en.12" on page 662</a> |
| H01.14    | 2001-0Fh              | Max. output power of the drive           | 0.00 kW–42949672.95kW                                                                                                                                                                          | 0.40    | kW   | Unchangeable | <a href="#">"H01_en.14" on page 662</a> |
| H01.16    | 2001-11h              | Rated output current of the drive        | 0.00 A–42949672.95 A                                                                                                                                                                           | 2.80    | A    | Unchangeable | <a href="#">"H01_en.16" on page 662</a> |
| H01.18    | 2001-13h              | Max. output current of the drive         | 0.00 A–42949672.95 A                                                                                                                                                                           | 10.10   | A    | Unchangeable | <a href="#">"H01_en.18" on page 662</a> |
| H01.40    | 2001-29h              | DC bus overvoltage protection threshold  | 0 V–2000 V                                                                                                                                                                                     | 420     | V    | Real-time    | <a href="#">"H01_en.40" on page 663</a> |
| H01.75    | 2001-4Ch              | Current loop amplification factor        | 0.00–655.35                                                                                                                                                                                    | 1.00    | -    | Real-time    | <a href="#">"H01_en.75" on page 663</a> |
| H01.88    | 2001-59h              | Junction temperature parameter version 1 | 0.0–6553.5                                                                                                                                                                                     | 0.0     | -    | Unchangeable | <a href="#">"H01_en.88" on page 663</a> |
| H01.89    | 2001-5Ah              | Junction temperature parameter version 2 | 0–65535                                                                                                                                                                                        | 0       | -    | Unchangeable | <a href="#">"H01_en.89" on page 663</a> |

### 3.3 H02 Basic Control Parameters

| Parameter | Communication Address | Name                         | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H02.00    | 2002-01h              | Control mode                 | 0: Velocity mode<br>1: Position mode<br>2: Torque mode<br>7: Technology segment<br>9: EtherCAT mode                                                                                                                                                                                                                                                                                                                                                       | 9       | -    | At stop     | <a href="#">"H02_en.00" on page 664</a> |
| H02.01    | 2002-02h              | Absolute system selection    | 0: Incremental mode<br>1: Absolute position linear mode<br>2: Absolute position rotation mode<br>3: Absolute position linear mode (without encoder overflow warning)<br>4: Absolute position single-turn mode                                                                                                                                                                                                                                             | 0       | -    | At stop     | <a href="#">"H02_en.01" on page 664</a> |
| H02.02    | 2002-03h              | Rotation direction selection | 0: Counterclockwise (CCW) as forward direction<br>1: Clockwise (CW) as forward direction                                                                                                                                                                                                                                                                                                                                                                  | 0       | -    | At stop     | <a href="#">"H02_en.02" on page 665</a> |
| H02.03    | 2002-04h              | Output pulse phase           | 0: Phase A leads phase B<br>1: Phase A lags behind phase B                                                                                                                                                                                                                                                                                                                                                                                                | 0       | -    | At stop     | <a href="#">"H02_en.03" on page 665</a> |
| H02.05    | 2002-06h              | Stop mode at S-ON OFF        | —4: Ramp to stop as defined by 6085h, keeping dynamic braking state<br>—3: at zero speed, keeping dynamic braking state<br>—2: Ramp to stop as defined by 6084h/609Ah (HM), keeping dynamic braking state<br>—1: Dynamic braking stop, keeping dynamic braking state<br>0: Coast to stop, keeping de-energized state<br>1: Ramp to stop as defined by 6084h/609Ah (HM), keeping de-energized state<br>2: Dynamic braking stop, keeping de-energized state | 0       | -    | Real-time   | <a href="#">"H02_en.05" on page 665</a> |

| Parameter | Communication Address | Name                    | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Default | Unit | Change Mode | Page                                     |
|-----------|-----------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|------------------------------------------|
| H02.06    | 2002-07h              | Stop mode at No.2 fault | -5: Stop at zero speed, keeping dynamic braking state<br>-4: Stop at emergency stop torque, keeping dynamic braking state<br>-3: Ramp to stop as defined by 6085h, keeping dynamic braking state<br>-2: Ramp to stop as defined by 6084h/ 609Ah (HM), keeping dynamic braking state<br>-1: Dynamic braking stop, keeping dynamic braking state<br>0: Coast to stop, keeping de-energized state<br>1: Ramp to stop as defined by 6084h/ 609Ah (HM), keeping de-energized state<br>2: Ramp to stop as defined by 6085h, keeping de-energized state<br>3: Stop at emergency stop torque, keeping de-energized state<br>4: Dynamic braking stop, keeping de-energized state | 2       | -    | Real-time   | <a href="#">" H02_en.06" on page 666</a> |
| H02.07    | 2002-08h              | Stop mode at overtravel | 0: Coast to stop, keeping de-energized state<br>1: Stop at zero speed, keeping position lock state<br>2: Stop at zero speed, keeping de-energized state<br>3: Stop based on ramp, keeping de-energized state<br>4: Stop based on ramp, keeping position lock state<br>5: Dynamic braking stop, keeping de-energized state<br>6: Dynamic braking stop, keeping dynamic braking state<br>7: Not responding to overtravel                                                                                                                                                                                                                                                  | 1       | -    | At stop     | <a href="#">" H02_en.07" on page 666</a> |

| Parameter | Communication Address | Name                                                        | Value                                                                                                                                                         | Default | Unit         | Change Mode | Page                    |
|-----------|-----------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------|-------------|-------------------------|
| H02.08    | 2002-09h              | Stop mode at No.1 fault                                     | 0: Coast to stop, keeping de-energized state<br>1: Dynamic braking stop, keeping de-energized state<br>2: Dynamic braking stop, keeping dynamic braking state | 2       | -            | At stop     | "H02_en.08" on page 667 |
| H02.09    | 2002-0Ah              | Delay from brake output ON to command received              | 0 ms to 500 ms                                                                                                                                                | 250     | ms           | Real-time   | "H02_en.09" on page 667 |
| H02.10    | 2002-0Bh              | Delay from brake output OFF to motor de-energized           | 50 ms to 1000 ms                                                                                                                                              | 150     | ms           | Real-time   | "H02_en.10" on page 668 |
| H02.11    | 2002-0Ch              | Motor speed threshold at brake output OFF in rotation state | 20[mm/s]/[rpm]–3000[mm/s]/[rpm]                                                                                                                               | 30      | [mm/s]/[rpm] | Real-time   | "H02_en.11" on page 668 |
| H02.12    | 2002-0Dh              | Delay from S-ON OFF to brake output OFF in rotation state   | 1 ms to 65535 ms                                                                                                                                              | 500     | ms           | Real-time   | "H02_en.12" on page 668 |
| H02.15    | 2002-10h              | LED warning display                                         | 0: Output warning information immediately<br>1: Not output warning information                                                                                | 0       | -            | Real-time   | "H02_en.15" on page 669 |
| H02.16    | 2002-11h              | Brake enable switch                                         | 0: OFF<br>1: ON                                                                                                                                               | 0       | -            | Real-time   | "H02_en.16" on page 669 |
| H02.17    | 2002-12h              | Stop mode upon main circuit power failure                   | 0: Keep current action<br>1: Stop upon fault as defined by H02.06<br>2: Stop at S-ON OFF as defined by H02.05<br>3: Stop quickly as defined by H02.18         | 2       | -            | Real-time   | "H02_en.17" on page 669 |



| Parameter | Communication Address | Name                                                    | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|--------------|-----------------------------------------|
| H02.18    | 2002-13h              | Quick stop mode                                         | 0: Coast to stop, keeping de-energized state<br>1: Ramp to stop as defined by 6084h/609Ah (HM), keeping de-energized state<br>2: Ramp to stop as defined by 6085h, keeping de-energized state<br>3: Stop at emergency stop torque, keeping de-energized state<br>5: Ramp to stop as defined by 6084h/609Ah (HM), keeping position lock state<br>6: Ramp to stop as defined by 6085h, keeping position lock state<br>7: Stop at emergency stop torque, keeping position lock state | 2       | -    | Real-time    | <a href="#">"H02_en.18" on page 670</a> |
| H02.21    | 2002-16h              | Permissible minimum resistance of regenerative resistor | 1Ω to 1000Ω                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 40      | Ω    | Unchangeable | <a href="#">"H02_en.21" on page 670</a> |
| H02.22    | 2002-17h              | Power of built-in regenerative resistor                 | 0 W–65535W                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 50      | W    | Unchangeable | <a href="#">"H02_en.22" on page 670</a> |
| H02.23    | 2002-18h              | Resistance of built-in regenerative resistor            | 0Ω to 65535Ω                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 50      | Ω    | Unchangeable | <a href="#">"H02_en.23" on page 671</a> |
| H02.24    | 2002-19h              | Resistor heat dissipation coefficient                   | 10% to 100%                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 30      | %    | Real-time    | <a href="#">"H02_en.24" on page 671</a> |
| H02.25    | 2002-1Ah              | Regenerative resistor type                              | 0: Built-in<br>1: External, natural cooling<br>2: External, forced air cooling<br>3: No resistor needed                                                                                                                                                                                                                                                                                                                                                                           | 3       | -    | Real-time    | <a href="#">"H02_en.25" on page 671</a> |
| H02.26    | 2002-1Bh              | Power of external regenerative resistor                 | 1 W–65535W                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 40      | W    | Real-time    | <a href="#">"H02_en.26" on page 672</a> |
| H02.27    | 2002-1Ch              | Resistance of external regenerative resistor            | 15Ω to 1000Ω                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 50      | Ω    | Real-time    | <a href="#">"H02_en.27" on page 672</a> |

| Parameter | Communication Address | Name                                              | Value                                                                                                                                                                                         | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H02.28    | 2002-1Dh              | Parameters Initialization                         | 0: Parameters in group H02 and above initialized<br>1: Parameters in group H00, H02 and above initialized<br>2: All parameters initialized (default values used for model-related parameters) | 0       | -    | At stop     | <a href="#">"H02_en.28" on page 672</a> |
| H02.30    | 2002-1Fh              | User password                                     | 0-65535                                                                                                                                                                                       | 0       | -    | Real-time   | <a href="#">"H02_en.30" on page 673</a> |
| H02.31    | 2002-20h              | System parameter initialization                   | 0: No operation<br>1: Restore default settings<br>2: Clear fault records                                                                                                                      | 0       | -    | At stop     | <a href="#">"H02_en.31" on page 673</a> |
| H02.32    | 2002-21h              | Selection of parameters in group H0b              | 0-99                                                                                                                                                                                          | 50      | -    | Real-time   | <a href="#">"H02_en.32" on page 673</a> |
| H02.35    | 2002-24h              | Keypad data update frequency                      | 0 Hz-20 Hz                                                                                                                                                                                    | 0       | Hz   | Real-time   | <a href="#">"H02_en.35" on page 674</a> |
| H02.41    | 2002-2Ah              | Manufacturer password                             | 0-65535                                                                                                                                                                                       | 0       | -    | Real-time   | <a href="#">"H02_en.41" on page 674</a> |
| H02.47    | 2002-30h              | Delay time from power cable breakage to brake OFF | 0 ms to 1000 ms                                                                                                                                                                               | 10      | ms   | Real-time   | <a href="#">"H02_en.47" on page 674</a> |

### 3.4 H03 Terminal Input Parameters

| Parameter | Communication Address | Name                | Value                                                    | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|---------------------|----------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H03.02    | 2003-03h              | DI1 function        | See <a href="#">"H03_en.02" on page 675</a> for details. | 14      | -    | Real-time   | <a href="#">"H03_en.02" on page 675</a> |
| H03.03    | 2003-04h              | DI1 logic selection | 0: Normally open<br>1: Closed                            | 0       | -    | Real-time   | <a href="#">"H03_en.03" on page 676</a> |
| H03.04    | 2003-05h              | DI2 function        | Same as H03.02                                           | 15      | -    | Real-time   | <a href="#">"H03_en.04" on page 676</a> |
| H03.05    | 2003-06h              | DI2 logic selection | 0: Normally open<br>1: Closed                            | 0       | -    | Real-time   | <a href="#">"H03_en.05" on page 676</a> |
| H03.06    | 2003-07h              | DI3 function        | Same as H03.02                                           | 31      | -    | Real-time   | <a href="#">"H03_en.06" on page 676</a> |
| H03.07    | 2003-08h              | DI3 logic selection | 0: Normally open<br>1: Closed                            | 0       | -    | Real-time   | <a href="#">"H03_en.07" on page 677</a> |

| Parameter | Communication Address | Name                                        | Value                           | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------------------|---------------------------------|---------|--------------|-------------|-----------------------------------------|
| H03.08    | 2003-09h              | DI4 function                                | Same as H03.02                  | 34      | -            | Real-time   | <a href="#">"H03_en.08" on page 677</a> |
| H03.09    | 2003-0Ah              | DI4 logic selection                         | 0: Normally open<br>1: Closed   | 0       | -            | Real-time   | <a href="#">"H03_en.09" on page 677</a> |
| H03.10    | 2003-0Bh              | DI5 function                                | Same as H03.02                  | 38      | -            | Real-time   | <a href="#">"H03_en.10" on page 678</a> |
| H03.11    | 2003-0Ch              | DI5 logic selection                         | 0: Normally open<br>1: Closed   | 0       | -            | Real-time   | <a href="#">"H03_en.11" on page 678</a> |
| H03.50    | 2003-33h              | Voltage-type AI1 offset                     | -5000 mV–5000 mV                | 0       | mV           | Real-time   | <a href="#">"H03_en.50" on page 678</a> |
| H03.51    | 2003-34h              | Voltage-type AI1 input filter time constant | 0.00 ms to 655.35 ms            | 2.00    | ms           | Real-time   | <a href="#">"H03_en.51" on page 678</a> |
| H03.53    | 2003-36h              | Voltage-type AI1 dead zone                  | 0.0 mV–1000.0 mV                | 10.0    | mV           | Real-time   | <a href="#">"H03_en.53" on page 679</a> |
| H03.54    | 2003-37h              | Voltage-type AI1 zero drift                 | -500.0 mV–500.0 mV              | 0.0     | mV           | Real-time   | <a href="#">"H03_en.54" on page 679</a> |
| H03.55    | 2003-38h              | Voltage-type AI2 offset                     | -5000 mV–5000 mV                | 0       | mV           | Real-time   | <a href="#">"H03_en.55" on page 679</a> |
| H03.56    | 2003-39h              | Voltage-type AI2 input filter time constant | 0.00 ms to 655.35 ms            | 2.00    | ms           | Real-time   | <a href="#">"H03_en.56" on page 680</a> |
| H03.58    | 2003-3Bh              | Voltage-type AI2 dead zone                  | 0.0 mV–1000.0 mV                | 10.0    | mV           | Real-time   | <a href="#">"H03_en.58" on page 680</a> |
| H03.59    | 2003-3Ch              | Voltage-type AI2 zero drift                 | -500.0 mV–500.0 mV              | 0.0     | mV           | Real-time   | <a href="#">"H03_en.59" on page 680</a> |
| H03.60    | 2003-3Dh              | DI1 fitter time                             | 0.00 ms to 500.00 ms            | 3.00    | ms           | Real-time   | <a href="#">"H03_en.60" on page 681</a> |
| H03.61    | 2003-3Eh              | DI2 fitter time                             | 0.00 ms to 500.00 ms            | 3.00    | ms           | Real-time   | <a href="#">"H03_en.61" on page 681</a> |
| H03.62    | 2003-3Fh              | DI3 fitter time                             | 0.00 ms to 500.00 ms            | 3.00    | ms           | Real-time   | <a href="#">"H03_en.62" on page 681</a> |
| H03.63    | 2003-40h              | DI4 fitter time                             | 0.00 ms to 500.00 ms            | 3.00    | ms           | Real-time   | <a href="#">"H03_en.63" on page 682</a> |
| H03.64    | 2003-41h              | DI5 fitter time                             | 0.00 ms to 500.00 ms            | 3.00    | ms           | Real-time   | <a href="#">"H03_en.64" on page 682</a> |
| H03.80    | 2003-51h              | Speed corresponding to analog 10 V          | 0[mm/s]/[rpm]–10000[mm/s]/[rpm] | 3000    | [mm/s]/[rpm] | At stop     | <a href="#">"H03_en.80" on page 682</a> |
| H03.81    | 2003-52h              | Torque corresponding to analog 10 V         | 0.00 to 8.00                    | 1.00    | Multiplier   | At stop     | <a href="#">"H03_en.81" on page 682</a> |

### 3.5 H04 Terminal Output Parameters

| Parameter | Communication Address | Name                                                | Value                                                                                                                                                                                                                                                                     | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H04.00    | 2004-01h              | DO1 function selection                              | 0: Undefined<br>1: Servo ready<br>2: Motor rotation signal<br>9: Braking<br>10: Warning<br>11: Failure<br>25: Comparison output DO<br>26: Closed-loop state<br>27: Left limit<br>28: Right limit<br>31: Forced communication DO<br>32: EDM output<br>33: Gantry alignment | 1       | -    | Real-time   | <a href="#">"H04_en.00" on page 683</a> |
| H04.01    | 2004-02h              | DO1 logic selection                                 | 0: Normally open<br>1: Closed                                                                                                                                                                                                                                             | 0       | -    | Real-time   | <a href="#">"H04_en.01" on page 683</a> |
| H04.02    | 2004-03h              | DO2 function selection                              | Same as H04.00                                                                                                                                                                                                                                                            | 11      | -    | Real-time   | <a href="#">"H04_en.02" on page 684</a> |
| H04.03    | 2004-04h              | DO2 logic selection                                 | 0: Normally open<br>1: Closed                                                                                                                                                                                                                                             | 0       | -    | Real-time   | <a href="#">"H04_en.03" on page 684</a> |
| H04.22    | 2004-17h              | DO source selection                                 | Bit0: DO1 output source<br>0: DO1 function output<br>1: Bit0 of H31.04<br>Bit1: DO2 output source<br>0: DO2 function output<br>1: Bit1 of H31.04                                                                                                                          | 0       | -    | Real-time   | <a href="#">"H04_en.22" on page 684</a> |
| H04.23    | 2004-18h              | ECAT communication-forced DO logic in non-OP status | Bit0: DO1<br>0: Maintain output<br>1: No output<br>Bit1: DO2<br>0: Maintain output<br>1: No output                                                                                                                                                                        | 0       | -    | Real-time   | <a href="#">"H04_en.23" on page 685</a> |
| H04.24    | 2004-19h              | DO brake enable                                     | 0: Disabled<br>1: Enable                                                                                                                                                                                                                                                  | 0       | -    | At stop     | <a href="#">"H04_en.24" on page 685</a> |

| Parameter | Communication Address | Name                 | Value                                                                                                                                                                                                                                                                                                                                                                                    | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H04.50    | 2004-33h              | AO1 signal selection | 0: Motor speed (1 V/1000 [mm/s]/[rpm])<br>1: Speed reference (1 V/1000 [mm/s]/[rpm])<br>2: Torque reference (1 V/100 x rated torque)<br>3: Position deviation (0.5 mV/1 reference unit)<br>4: Position deviation (0.5 mV/1 encoder unit)<br>5: Position reference speed (1 V/1000 [mm/s]/[rpm])<br>6: Positioning completed<br>8: AI1 voltage<br>9: AI2 voltage<br>10: Defined by H31.05 | 0       | -    | Real-time   | <a href="#">"H04_en.50" on page 685</a> |
| H04.51    | 2004-34h              | AO1 offset voltage   | -10000 mV–10000 mV                                                                                                                                                                                                                                                                                                                                                                       | 0       | mV   | Real-time   | <a href="#">"H04_en.51" on page 686</a> |
| H04.52    | 2004-35h              | AO1 ratio            | -99.99–99.99                                                                                                                                                                                                                                                                                                                                                                             | 1.00    | -    | Real-time   | <a href="#">"H04_en.52" on page 686</a> |

### 3.6 H05 Position Control Parameters

| Parameter | Communication Address | Name                                      | Value                       | Default | Unit          | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------|-----------------------------|---------|---------------|-------------|-----------------------------------------|
| H05.00    | 2005-01h              | Primary position reference source         | 2: Multi-position reference | 2       | -             | Real-time   | <a href="#">"H05_en.00" on page 687</a> |
| H05.02    | 2005-03h              | Pulses per revolution                     | 0–4294967295                | 0       | [P/N]/[P/Rev] | At stop     | <a href="#">"H05_en.02" on page 687</a> |
| H05.04    | 2005-05h              | First-order low-pass filter time constant | 0.0 ms–6553.5 ms            | 0.0     | ms            | At stop     | <a href="#">"H05_en.04" on page 687</a> |
| H05.06    | 2005-07h              | Moving average filter time constant 1     | 0.0 ms–128.0 ms             | 0.0     | ms            | At stop     | <a href="#">"H05_en.06" on page 687</a> |
| H05.07    | 2005-08h              | Electronic gear ratio 1 (numerator)       | 1–1073741824                | 1       | -             | Real-time   | <a href="#">"H05_en.07" on page 688</a> |

| Parameter | Communication Address | Name                                        | Value                                                                                                                                                                                       | Default | Unit                    | Change Mode | Page                    |
|-----------|-----------------------|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------------------------|-------------|-------------------------|
| H05.09    | 2005-0Ah              | Electronic gear ratio 1 (denominator)       | 1–1073741824                                                                                                                                                                                | 1       | -                       | Real-time   | "H05_en.09" on page 688 |
| H05.11    | 2005-0Ch              | Electronic gear ratio 2 (numerator)         | 1–1073741824                                                                                                                                                                                | 1       | -                       | Real-time   | "H05_en.11" on page 688 |
| H05.13    | 2005-0Eh              | Electronic gear ratio 2 (denominator)       | 1–1073741824                                                                                                                                                                                | 1       | -                       | Real-time   | "H05_en.13" on page 688 |
| H05.16    | 2005-11h              | Clear action                                | 0: Position deviation cleared upon S-OFF or fault<br>1: Position deviation cleared upon S-OFF or fault<br>2: Position deviation cleared upon non-operational state or active DI function 35 | 0       | -                       | At stop     | "H05_en.16" on page 689 |
| H05.17    | 2005-12h              | Number of encoder frequency-division pulses | 0–4194303                                                                                                                                                                                   | 2500    | [P/N-<br>N]/[P/<br>Rev] | At stop     | "H05_en.17" on page 689 |
| H05.19    | 2005-14h              | Speed feedforward control                   | 0: No speed feedforward<br>1: Internal speed feedforward<br>2: H05.72<br>3: Zero phase                                                                                                      | 1       | -                       | At stop     | "H05_en.19" on page 689 |
| H05.21    | 2005-16h              | Threshold of positioning completed          | 1 to 65535                                                                                                                                                                                  | 46976   | Encoder unit            | Real-time   | "H05_en.21" on page 690 |
| H05.22    | 2005-17h              | Proximity threshold                         | 1 to 65535                                                                                                                                                                                  | 65535   | Encoder unit            | Real-time   | "H05_en.22" on page 691 |
| H05.30    | 2005-1Fh              | Homing enable selection                     | 0: Disabled<br>6: Current position                                                                                                                                                          | 0       | -                       | Real-time   | "H05_en.30" on page 691 |
| H05.35    | 2005-24h              | Home search time limit                      | 0 ms–65535 ms                                                                                                                                                                               | 10000   | ms                      | Real-time   | "H05_en.35" on page 691 |
| H05.36    | 2005-25h              | Mechanical home offset                      | -2147483648 to 2147483647                                                                                                                                                                   | 0       | Reference unit          | Real-time   | "H05_en.36" on page 691 |
| H05.38    | 2005-27h              | Frequency-division output source            | 0: Encoder frequency-division output<br>2: Frequency-division output inhibited<br>3: Second encoder frequency-division output<br>4: H31-01 reference frequency output                       | 0       | -                       | Real-time   | "H05_en.38" on page 692 |

| Parameter | Communication Address | Name                                                     | Value                                                                                                                                                                                                                                                                                                                                                                                                              | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H05.39    | 2005-28h              | Electronic gear ratio switchover condition               | 0: Switchover after position reference is kept 0 for 2.5 ms<br>1: Switched in real time                                                                                                                                                                                                                                                                                                                            | 0       | -    | At stop     | <a href="#">"H05_en.39" on page 692</a> |
| H05.40    | 2005-29h              | Mechanical home offset and action upon overtravel        | 0: H05.36 as the coordinate after homing, reverse homing applied after homing triggered again on overtravel<br>1: H05.36 as the relative offset after homing, reverse homing applied after homing triggered again on overtravel<br>2: H05.36 as the coordinate after homing, reverse homing auto-applied on overtravel<br>3: H05.36 as the relative offset after homing, reverse homing auto-applied on overtravel | 0       | -    | Real-time   | <a href="#">"H05_en.40" on page 692</a> |
| H05.41    | 2005-2Ah              | Z pulse output polarity                                  | bit0: Frequency-division Z output polarity<br>0: Positive (high level upon active Z pulse)<br>1: Negative (low level upon active Z pulse)<br>bit1: OCZ output polarity<br>0: Positive (high level upon active Z pulse)<br>1: Negative (low level upon active Z pulse)<br>bit2: Inner loop probe Z signal source<br>0: Motor Z signal<br>1: Frequency-division output Z signal                                      | 1       | -    | At stop     | <a href="#">"H05_en.41" on page 693</a> |
| H05.44    | 2005-2Dh              | Numerator of frequency-division output reduction ratio   | 1–16383                                                                                                                                                                                                                                                                                                                                                                                                            | 1       | -    | At stop     | <a href="#">"H05_en.44" on page 694</a> |
| H05.45    | 2005-2Eh              | Denominator of frequency-division output reduction ratio | 1–8191                                                                                                                                                                                                                                                                                                                                                                                                             | 1       | -    | At stop     | <a href="#">"H05_en.45" on page 694</a> |

| Parameter | Communication Address | Name                                                                                | Value                                                             | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H05.46    | 2005-2Fh              | DI selection of multi-turn frequency-division Z starting point                      | 0: No operation<br>1: DI1<br>2: DI2<br>3: DI3<br>4: DI4<br>5: DI5 | 0       | -            | Real-time   | <a href="#">"H05_en.46" on page 694</a> |
| H05.47    | 2005-30h              | Frequency-division Z pulse width                                                    | 0 us to 400 us                                                    | 0       | us           | Real-time   | <a href="#">"H05_en.47" on page 694</a> |
| H05.48    | 2005-31h              | Frequency-division output dead zone setting threshold                               | 0–255                                                             | 0       | -            | Real-time   | <a href="#">"H05_en.48" on page 695</a> |
| H05.50    | 2005-33h              | Mechanical gear ratio in absolute position rotation mode (numerator)                | 1–65535                                                           | 1       | -            | At stop     | <a href="#">"H05_en.50" on page 695</a> |
| H05.51    | 2005-34h              | Mechanical gear ratio in absolute position rotation mode (denominator)              | 1–65535                                                           | 1       | -            | At stop     | <a href="#">"H05_en.51" on page 695</a> |
| H05.52    | 2005-35h              | Pulses per revolution of the load in absolute position rotation mode (low 32 bits)  | 0 to 4294967295                                                   | 0       | Encoder unit | At stop     | <a href="#">"H05_en.52" on page 696</a> |
| H05.54    | 2005-37h              | Pulses per revolution of the load in absolute position rotation mode (high 32 bits) | 0 to 4294967295                                                   | 0       | Encoder unit | At stop     | <a href="#">"H05_en.54" on page 696</a> |
| H05.58    | 2005-3Bh              | Torque threshold in homing upon hit-and-stop                                        | 0.0% to 400.0%                                                    | 100.0   | %            | Real-time   | <a href="#">"H05_en.58" on page 696</a> |



| Parameter | Communication Address | Name                                                        | Value                            | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------------------------|----------------------------------|---------|--------------|-------------|-----------------------------------------|
| H05.60    | 2005-3Dh              | Hold time of positioning completed                          | 0 ms–30000 ms                    | 0       | ms           | Real-time   | <a href="#">"H05_en.60" on page 697</a> |
| H05.66    | 2005-43h              | Homing time unit                                            | 0: 1 ms<br>1: 10 ms<br>2: 100 ms | 2       | -            | At stop     | <a href="#">"H05_en.66" on page 697</a> |
| H05.67    | 2005-44h              | Offset between zero point and single-turn absolute position | -2147483648 to 2147483647        | 0       | Encoder unit | At stop     | <a href="#">"H05_en.67" on page 698</a> |
| H05.71    | 2005-48h              | Motor Z signal width                                        | 1 ms–100 ms                      | 4       | ms           | Real-time   | <a href="#">"H05_en.71" on page 698</a> |
| H05.72    | 2005-49h              | External speed feedforward source selection                 | 0: 60B1<br>1: AI1<br>2: AI2      | 0       | -            | Real-time   | <a href="#">"H05_en.72" on page 698</a> |

### 3.7 H06 Speed Control Parameters

| Parameter | Communication Address | Name                                  | Value                                                                                                                                        | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H06.00    | 2006-01h              | Source of main speed reference A      | 0: Digital setting (H06.03)<br>1: AI1<br>2: AI2                                                                                              | 0       | -            | At stop     | <a href="#">"H06_en.00" on page 699</a> |
| H06.01    | 2006-02h              | Source of auxiliary speed reference B | 0: Digital setting (H06.03)<br>1: AI1<br>2: AI2<br>5: Multi-speed reference                                                                  | 1       | -            | At stop     | <a href="#">"H06_en.01" on page 699</a> |
| H06.02    | 2006-03h              | Speed reference source                | 0: Source of main speed reference A<br>1: Source of auxiliary speed reference B<br>2: A+B<br>3: Switched between A and B<br>4: Communication | 0       | -            | At stop     | <a href="#">"H06_en.02" on page 699</a> |
| H06.03    | 2006-04h              | Speed reference set through keypad    | -10000[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                                                         | 200     | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.03" on page 700</a> |
| H06.04    | 2006-05h              | DI jog speed reference                | 0[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                                                              | 150     | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.04" on page 700</a> |

| Parameter | Communication Address | Name                                       | Value                                                                                                 | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|--------------------------------------------|-------------------------------------------------------------------------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H06.05    | 2006-06h              | Acc. ramp time of speed reference          | 0 ms to 65535 ms                                                                                      | 0       | ms           | Real-time   | <a href="#">"H06_en.05" on page 700</a> |
| H06.06    | 2006-07h              | Dec. ramp time of speed reference          | 0 ms to 65535 ms                                                                                      | 0       | ms           | Real-time   | <a href="#">"H06_en.06" on page 701</a> |
| H06.07    | 2006-08h              | Maximum speed limit                        | 0[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                       | 7000    | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.07" on page 701</a> |
| H06.08    | 2006-09h              | Forward speed threshold                    | 0[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                       | 7000    | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.08" on page 701</a> |
| H06.09    | 2006-0Ah              | Reverse speed threshold                    | 0[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                       | 7000    | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.09" on page 702</a> |
| H06.10    | 2006-0Bh              | Deceleration unit in emergency stop        | 0: Multiplied by 1<br>1: Multiplied by 10<br>2: Multiplied by 100                                     | 0       | -            | At stop     | <a href="#">"H06_en.10" on page 702</a> |
| H06.11    | 2006-0Ch              | Torque feedforward control                 | 0: No torque feedforward<br>1: Internal torque feedforward<br>2: 60B2h as external torque feedforward | 1       | -            | Real-time   | <a href="#">"H06_en.11" on page 702</a> |
| H06.12    | 2006-0Dh              | Acceleration ramp time of jog speed        | 0 ms to 65535 ms                                                                                      | 10      | ms           | Real-time   | <a href="#">"H06_en.12" on page 702</a> |
| H06.13    | 2006-0Eh              | Speed feedforward smoothing filter         | 0us to 65535us                                                                                        | 0       | us           | Real-time   | <a href="#">"H06_en.13" on page 703</a> |
| H06.15    | 2006-10h              | Zero clamp speed threshold                 | 0[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                       | 10      | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.15" on page 703</a> |
| H06.16    | 2006-11h              | Threshold of TGON (motor rotation) signal  | 0[mm/s]/[rpm]–1000[mm/s]/[rpm]                                                                        | 20      | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.16" on page 703</a> |
| H06.17    | 2006-12h              | Threshold of V-Cmp (speed matching) signal | 0[mm/s]/[rpm]–100[mm/s]/[rpm]                                                                         | 10      | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.17" on page 704</a> |
| H06.18    | 2006-13h              | Threshold of speed reach signal            | 20[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                      | 1000    | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.18" on page 704</a> |
| H06.19    | 2006-14h              | Threshold of zero speed output signal      | 1[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                       | 10      | [mm/s]/[rpm] | Real-time   | <a href="#">"H06_en.19" on page 704</a> |

| Parameter | Communication Address | Name                                                          | Value                     | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------------------------------------|---------------------------|---------|------|-------------|-----------------------------------------|
| H06.50    | 2006-33h              | Speed S-curve enable switch                                   | 0: Disabled<br>1: Enabled | 1       | -    | At stop     | <a href="#">"H06_en.50" on page 704</a> |
| H06.51    | 2006-34h              | Increasing acceleration of speed S-curve acceleration segment | 0.0% to 100.0%            | 50.0    | %    | At stop     | <a href="#">"H06_en.51" on page 705</a> |
| H06.52    | 2006-35h              | Decreasing acceleration of speed S-curve acceleration segment | 0.0% to 100.0%            | 50.0    | %    | At stop     | <a href="#">"H06_en.52" on page 705</a> |
| H06.53    | 2006-36h              | Decreasing deceleration of speed S-curve deceleration segment | 0.0% to 100.0%            | 50.0    | %    | At stop     | <a href="#">"H06_en.53" on page 705</a> |
| H06.54    | 2006-37h              | Decreasing acceleration of speed S-curve deceleration segment | 0.0% to 100.0%            | 50.0    | %    | At stop     | <a href="#">"H06_en.54" on page 705</a> |

### 3.8 H07 Torque Control Parameters

| Parameter | Communication Address | Name                                   | Value                                                                                                                                                    | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H07.00    | 2007-01h              | Source of main torque reference A      | 0: Keypad (H07.03)<br>1: AI1<br>2: AI2                                                                                                                   | 0       | -    | At stop     | <a href="#">"H07_en.00" on page 706</a> |
| H07.01    | 2007-02h              | Source of auxiliary torque reference B | 0: Keypad (H07.03)<br>1: AI1<br>2: AI2                                                                                                                   | 1       | -    | At stop     | <a href="#">"H07_en.01" on page 706</a> |
| H07.02    | 2007-03h              | Torque reference source                | 0: Source of main torque reference A<br>1: Source of auxiliary torque reference B<br>2: Source of A+B<br>3: Switched between A and B<br>4: Communication | 0       | -    | At stop     | <a href="#">"H07_en.02" on page 706</a> |
| H07.03    | 2007-04h              | Torque reference set through keypad    | -400.0% to 400.0%                                                                                                                                        | 0.0     | %    | Real-time   | <a href="#">"H07_en.03" on page 707</a> |

| Parameter | Communication Address | Name                                                 | Value                                                                                                                                                                                                                                                | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H07.05    | 2007-06h              | Torque reference filter time constant 1              | 0.00 ms–30.00 ms                                                                                                                                                                                                                                     | 0.50    | ms           | Real-time   | <a href="#">"H07_en.05" on page 707</a> |
| H07.06    | 2007-07h              | Torque reference filter time constant 2              | 0.00 ms–30.00 ms                                                                                                                                                                                                                                     | 0.27    | ms           | Real-time   | <a href="#">"H07_en.06" on page 707</a> |
| H07.07    | 2007-08h              | Torque Limit source                                  | 0: Positive/Negative internal torque limit<br>1: Internal or external limit as defined by DI<br>2: T_LMT<br>3: T_LMT or external limit as defined by DI (FunIN.16 or FunIN.17)<br>4: T_LMT or internal limit (FunIN.16 or FunIN.17) as defined by DI | 0       | -            | Real-time   | <a href="#">"H07_en.07" on page 708</a> |
| H07.08    | 2007-09h              | T-LMT selection                                      | 1: AI1<br>2: AI2                                                                                                                                                                                                                                     | 1       | -            | Real-time   | <a href="#">"H07_en.08" on page 708</a> |
| H07.09    | 2007-0Ah              | Positive internal torque limit                       | 0.0% to 400.0%                                                                                                                                                                                                                                       | 350.0   | %            | Real-time   | <a href="#">"H07_en.09" on page 708</a> |
| H07.10    | 2007-0Bh              | Negative internal torque limit                       | 0.0% to 400.0%                                                                                                                                                                                                                                       | 350.0   | %            | Real-time   | <a href="#">"H07_en.10" on page 709</a> |
| H07.11    | 2007-0Ch              | Positive external torque limit                       | 0.0% to 400.0%                                                                                                                                                                                                                                       | 350.0   | %            | Real-time   | <a href="#">"H07_en.11" on page 709</a> |
| H07.12    | 2007-0Dh              | Negative external torque limit                       | 0.0% to 400.0%                                                                                                                                                                                                                                       | 350.0   | %            | Real-time   | <a href="#">"H07_en.12" on page 709</a> |
| H07.15    | 2007-10h              | Emergency-stop torque                                | 0.0% to 400.0%                                                                                                                                                                                                                                       | 100.0   | %            | Real-time   | <a href="#">"H07_en.15" on page 709</a> |
| H07.17    | 2007-12h              | Speed limit source                                   | 0: Internal speed limit<br>1: V-LMT<br>2: H07.19 or H07.20 as defined by DI                                                                                                                                                                          | 0       | -            | Real-time   | <a href="#">"H07_en.17" on page 710</a> |
| H07.18    | 2007-13h              | V-LMT selection                                      | 1: AI1<br>2: AI2                                                                                                                                                                                                                                     | 1       | -            | Real-time   | <a href="#">"H07_en.18" on page 710</a> |
| H07.19    | 2007-14h              | Positive speed limit/Speed limit 1 in torque control | 0[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                                                                                                                                                                      | 3000    | [mm/s]/[rpm] | Real-time   | <a href="#">"H07_en.19" on page 710</a> |

| Parameter | Communication Address | Name                                                 | Value                                     | Default | Unit         | Change Mode  | Page                                    |
|-----------|-----------------------|------------------------------------------------------|-------------------------------------------|---------|--------------|--------------|-----------------------------------------|
| H07.20    | 2007-15h              | Negative speed limit/Speed limit 2 in torque control | 0[mm/s]/[rpm]–10000[mm/s]/[rpm]           | 3000    | [mm/s]/[rpm] | Real-time    | <a href="#">"H07_en.20" on page 711</a> |
| H07.21    | 2007-16h              | Torque reach base value                              | 0.0% to 400.0%                            | 0.0     | %            | Real-time    | <a href="#">"H07_en.21" on page 711</a> |
| H07.22    | 2007-17h              | Torque reach valid value                             | 0.0% to 400.0%                            | 20.0    | %            | Real-time    | <a href="#">"H07_en.22" on page 711</a> |
| H07.23    | 2007-18h              | Torque reach invalid value                           | 0.0% to 400.0%                            | 10.0    | %            | Real-time    | <a href="#">"H07_en.23" on page 711</a> |
| H07.24    | 2007-19h              | Field weakening depth                                | 60% to 115%                               | 115     | %            | Real-time    | <a href="#">"H07_en.24" on page 712</a> |
| H07.25    | 2007-1Ah              | Max. permissible demagnetizing current               | 0% to 300%                                | 100     | %            | Real-time    | <a href="#">"H07_en.25" on page 712</a> |
| H07.26    | 2007-1Bh              | Field weakening selection                            | 0: Disabled<br>1: Enabled                 | 0       | -            | At stop      | <a href="#">"H07_en.26" on page 712</a> |
| H07.27    | 2007-1Ch              | Flux weakening gain                                  | 0.001 kHz–1.000 kHz                       | 0.030   | kHz          | Real-time    | <a href="#">"H07_en.27" on page 712</a> |
| H07.28    | 2007-1Dh              | Speed of flux weakening point                        | 0–65535                                   | 0       | -            | Unchangeable | <a href="#">"H07_en.28" on page 713</a> |
| H07.36    | 2007-25h              | Time constant of low-pass filter 2                   | 0.00 ms–10.00 ms                          | 0.00    | ms           | Real-time    | <a href="#">"H07_en.36" on page 713</a> |
| H07.37    | 2007-26h              | Torque reference filter selection                    | 0: First-order filter<br>1: Biquad filter | 0       | -            | Real-time    | <a href="#">"H07_en.37" on page 713</a> |
| H07.38    | 2007-27h              | Biquad filter attenuation ratio                      | 0–50                                      | 16      | -            | Real-time    | <a href="#">"H07_en.38" on page 714</a> |
| H07.40    | 2007-29h              | Speed limit threshold in torque control mode         | 0 ms–300 ms                               | 10      | ms           | Real-time    | <a href="#">"H07_en.40" on page 714</a> |
| H07.42    | 2007-2Bh              | Biquad low pass filter damping coefficient           | 0.001–10.000                              | 1.000   | -            | Real-time    | <a href="#">"H07_en.42" on page 714</a> |

### 3.9 H08 Gain Parameters

| Parameter | Communication Address | Name                                  | Value                                                                                                                                                                                                                                                                                                                                                                                                                                            | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H08.00    | 2008-01h              | Speed loop gain                       | 0.1 Hz–2000.0 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                 | 40.0    | Hz   | Real-time   | <a href="#">"H08_en.00" on page 715</a> |
| H08.01    | 2008-02h              | Speed loop integral time constant     | 0.15 ms to 512.00 ms                                                                                                                                                                                                                                                                                                                                                                                                                             | 19.89   | ms   | Real-time   | <a href="#">"H08_en.01" on page 715</a> |
| H08.02    | 2008-03h              | Position loop gain                    | 0.1 Hz–2000.0 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                 | 64.0    | Hz   | Real-time   | <a href="#">"H08_en.02" on page 715</a> |
| H08.03    | 2008-04h              | 2nd speed loop gain                   | 0.1 Hz–2000.0 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                 | 75.0    | Hz   | Real-time   | <a href="#">"H08_en.03" on page 716</a> |
| H08.04    | 2008-05h              | 2nd speed loop integral time constant | 0.15 ms to 512.00 ms                                                                                                                                                                                                                                                                                                                                                                                                                             | 10.61   | ms   | Real-time   | <a href="#">"H08_en.04" on page 716</a> |
| H08.05    | 2008-06h              | 2nd position loop gain                | 0.1 Hz–2000.0 Hz                                                                                                                                                                                                                                                                                                                                                                                                                                 | 120.0   | Hz   | Real-time   | <a href="#">"H08_en.05" on page 716</a> |
| H08.08    | 2008-09h              | 2nd gain mode setting                 | 0: Fixed to the 1st gain, switched between P and PI as defined by bit26 of external 60FEh<br>1: Switched between the 1st and 2nd gain sets as defined by H08.09                                                                                                                                                                                                                                                                                  | 1       | -    | Real-time   | <a href="#">"H08_en.08" on page 717</a> |
| H08.09    | 2008-0Ah              | Gain switchover condition             | 0: Fixed to the 1st gain set (PS)<br>1: Switched as defined by bit26 of 60FEh<br>2: Torque reference too large (PS)<br>3: Speed reference too large (PS)<br>4: Speed reference change rate too large (PS)<br>5: Speed reference low/high speed threshold (PS)<br>6: Position deviation too large (P)<br>7: Position reference available (P)<br>8: Positioning unfinished (P)<br>9: Actual speed (P)<br>10: Position reference + Actual speed (P) | 0       | -    | Real-time   | <a href="#">"H08_en.09" on page 717</a> |
| H08.10    | 2008-0Bh              | Gain switchover delay                 | 0.0 ms to 1000.0 ms                                                                                                                                                                                                                                                                                                                                                                                                                              | 5.0     | ms   | Real-time   | <a href="#">"H08_en.10" on page 717</a> |

| Parameter | Communication Address | Name                                               | Value                                                                 | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------------------------|-----------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H08.11    | 2008-0Ch              | Gain switchover level                              | 0–20000                                                               | 50      | -    | Real-time   | <a href="#">"H08_en.11" on page 718</a> |
| H08.12    | 2008-0Dh              | Gain switchover hysteresis                         | 0–20000                                                               | 30      | -    | Real-time   | <a href="#">"H08_en.12" on page 718</a> |
| H08.13    | 2008-0Eh              | Position gain switchover time                      | 0.0 ms to 1000.0 ms                                                   | 3.0     | ms   | Real-time   | <a href="#">"H08_en.13" on page 718</a> |
| H08.15    | 2008-10h              | Load moment of inertia ratio                       | 0.00–120.00                                                           | 1.00    | -    | Real-time   | <a href="#">"H08_en.15" on page 719</a> |
| H08.17    | 2008-12h              | Zero phase delay                                   | 0.0 ms to 4.0 ms                                                      | 0.0     | ms   | Real-time   | <a href="#">"H08_en.17" on page 719</a> |
| H08.18    | 2008-13h              | Time constant of speed feedforward filter          | 0.00 ms to 64.00 ms                                                   | 0.50    | ms   | Real-time   | <a href="#">"H08_en.18" on page 719</a> |
| H08.19    | 2008-14h              | Speed feedforward gain                             | 0.0% to 100.0%                                                        | 0.0     | %    | Real-time   | <a href="#">"H08_en.19" on page 720</a> |
| H08.20    | 2008-15h              | Torque feedforward filter time constant            | 0.00 ms to 64.00 ms                                                   | 0.50    | ms   | Real-time   | <a href="#">"H08_en.20" on page 720</a> |
| H08.21    | 2008-16h              | Torque feedforward gain                            | 0.0% to 300.0%                                                        | 0.0     | %    | Real-time   | <a href="#">"H08_en.21" on page 720</a> |
| H08.22    | 2008-17h              | Speed feedback filtering option                    | 0: Inhibited<br>1: 2 times<br>2: 4 times<br>3: 8 times<br>4: 16 times | 0       | -    | At stop     | <a href="#">"H08_en.22" on page 721</a> |
| H08.23    | 2008-18h              | Cutoff frequency of speed feedback low-pass filter | 100 Hz–8000 Hz                                                        | 8000    | Hz   | Real-time   | <a href="#">"H08_en.23" on page 721</a> |
| H08.24    | 2008-19h              | PDF control coefficient                            | 0.0% to 200.0%                                                        | 100.0   | %    | Real-time   | <a href="#">"H08_en.24" on page 722</a> |
| H08.25    | 2008-1Ah              | Speed measurement method                           | 0: M-method<br>1: MT-method                                           | 0       | -    | At stop     | <a href="#">"H08_en.25" on page 722</a> |
| H08.27    | 2008-1Ch              | Speed observer cutoff frequency                    | 50 Hz–600 Hz                                                          | 170     | Hz   | Real-time   | <a href="#">"H08_en.27" on page 723</a> |

| Parameter | Communication Address | Name                                                            | Value                                    | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------------------------------------------|------------------------------------------|---------|------|-------------|-----------------------------------------|
| H08.28    | 2008-1Dh              | Speed observer inertia correction coefficient                   | 1% to 1600%                              | 100     | %    | Real-time   | <a href="#">"H08_en.28" on page 723</a> |
| H08.29    | 2008-1Eh              | Speed observer filter time                                      | 0.00 ms to 10.00 ms                      | 0.80    | ms   | Real-time   | <a href="#">"H08_en.29" on page 723</a> |
| H08.31    | 2008-20h              | Disturbance cutoff frequency                                    | 1 Hz–4000 Hz                             | 600     | Hz   | Real-time   | <a href="#">"H08_en.31" on page 723</a> |
| H08.32    | 2008-21h              | Disturbance compensation gain                                   | 0% to 100%                               | 0       | %    | Real-time   | <a href="#">"H08_en.32" on page 724</a> |
| H08.33    | 2008-22h              | Disturbance observer inertia correction coefficient             | 1% to 1600%                              | 100     | %    | Real-time   | <a href="#">"H08_en.33" on page 724</a> |
| H08.40    | 2008-29h              | Speed observer selection                                        | 0: Disabled<br>1: Enabled                | 0       | -    | Real-time   | <a href="#">"H08_en.40" on page 724</a> |
| H08.42    | 2008-2Bh              | Model control selection                                         | 0: Disabled<br>1: Enabled<br>2: Reserved | 0       | -    | Real-time   | <a href="#">"H08_en.42" on page 725</a> |
| H08.43    | 2008-2Ch              | Model gain                                                      | 0.1–2000.0                               | 40.0    | -    | Real-time   | <a href="#">"H08_en.43" on page 725</a> |
| H08.46    | 2008-2Fh              | Feedforward value                                               | 0.0–102.4                                | 95.0    | -    | Real-time   | <a href="#">"H08_en.46" on page 725</a> |
| H08.53    | 2008-36h              | Medium- and low-frequency jitter suppression frequency 3        | 0.0 Hz–300.0 Hz                          | 0.0     | Hz   | Real-time   | <a href="#">"H08_en.53" on page 726</a> |
| H08.54    | 2008-37h              | Medium- and low-frequency jitter suppression compensation 3     | 0% to 200%                               | 0       | %    | Real-time   | <a href="#">"H08_en.54" on page 726</a> |
| H08.56    | 2008-39h              | Medium- and low-frequency jitter suppression phase modulation 3 | 0% to 600%                               | 100     | %    | Real-time   | <a href="#">"H08_en.56" on page 726</a> |



| Parameter | Communication Address | Name                                                            | Value                     | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------------------------------------------|---------------------------|---------|------|-------------|-----------------------------------------|
| H08.59    | 2008-3Ch              | Medium- and low-frequency jitter suppression frequency 4        | 0.0 Hz–300.0 Hz           | 0.0     | Hz   | Real-time   | <a href="#">"H08_en.59" on page 726</a> |
| H08.60    | 2008-3Dh              | Medium- and low-frequency jitter suppression compensation 4     | 0% to 200%                | 0       | %    | Real-time   | <a href="#">"H08_en.60" on page 727</a> |
| H08.61    | 2008-3Eh              | Medium- and low-frequency jitter suppression phase modulation 4 | 0% to 600%                | 100     | %    | Real-time   | <a href="#">"H08_en.61" on page 727</a> |
| H08.62    | 2008-3Fh              | Position loop integral time constant                            | 0.15–512.00               | 512.00  | -    | Real-time   | <a href="#">"H08_en.62" on page 727</a> |
| H08.63    | 2008-40h              | 2nd position loop integral time constant                        | 0.15–512.00               | 512.00  | -    | Real-time   | <a href="#">"H08_en.63" on page 728</a> |
| H08.64    | 2008-41h              | Speed observer feedback source                                  | 0: Disabled<br>1: Enabled | 0       | -    | Real-time   | <a href="#">"H08_en.64" on page 728</a> |
| H08.65    | 2008-42h              | Zero deviation control selection                                | 0: Disabled<br>1: Enabled | 0       | -    | Real-time   | <a href="#">"H08_en.65" on page 728</a> |
| H08.66    | 2008-43h              | Zero deviation control position average filter                  | 0.0 ms to 320.0 ms        | 5.0     | ms   | Real-time   | <a href="#">"H08_en.66" on page 728</a> |
| H08.68    | 2008-45h              | Speed feedforward of zero deviation control                     | 0.0% to 100.0%            | 100.0   | %    | Real-time   | <a href="#">"H08_en.68" on page 729</a> |

| Parameter | Communication Address | Name                                           | Value                                                                                                                                                                                        | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H08.69    | 2008-46h              | Torque feedforward of zero deviation control   | 0.0% to 100.0%                                                                                                                                                                               | 100.0   | %    | Real-time   | <a href="#">"H08_en.69" on page 729</a> |
| H08.90    | 2008-5Bh              | Encoder scale spacing ripple suppressor enable | 0: Inhibited<br>1: 1st group activated only-adaptive mode<br>2: 1st group activated only-hysteresis mode<br>3: Two groups activated-adaptive mode<br>4: Two groups activated-hysteresis mode | 0       | -    | Real-time   | <a href="#">"H08_en.90" on page 729</a> |

### 3.10 H09 Auto-tuning Parameters

| Parameter | Communication Address | Name                      | Value                                                                                                                                                                                                                                                                                                                                                                                | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H09.00    | 2009-01h              | Auto-adjustment mode      | 0: Disabled, manual gain tuning required<br><br>1: Enabled, gain parameters generated automatically based on the stiffness level<br>2: Positioning mode, gain parameters generated automatically based on the stiffness level<br>3: Interpolation mode+Inertia auto-tuning<br>4: Normal mode+Inertia auto-tuning<br>5: Stune mode 5<br>6: Quick positioning mode+Inertia auto-tuning | 4       | -    | Real-time   | <a href="#">"H09_en.00" on page 730</a> |
| H09.01    | 2009-02h              | Stiffness level selection | 0–41                                                                                                                                                                                                                                                                                                                                                                                 | 15      | -    | Real-time   | <a href="#">"H09_en.01" on page 730</a> |

| Parameter | Communication Address | Name                                                                    | Value                                                                                                                                                                                                                                                                                 | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H09.02    | 2009-03h              | Mode selection of adaptive notch                                        | 0: Adaptive notch no longer updated<br>1: One adaptive notch activated (3rd notch)<br>2: Two adaptive notches activated (3rd and 4th notches)<br>3: Resonance point tested only (displayed in H09.24)<br>4: Adaptive notch cleared, values of 3rd and 4th notches restored to default | 0       | -            | Real-time   | <a href="#">"H09_en.02" on page 731</a> |
| H09.03    | 2009-04h              | Online inertia auto-tuning mode                                         | 0: Disabled<br>1: Enabled, changing slowly<br>2: Enabled, changing normally<br>3: Enabled, changing quickly                                                                                                                                                                           | 0       | -            | Real-time   | <a href="#">"H09_en.03" on page 731</a> |
| H09.05    | 2009-06h              | Offline inertia auto-tuning mode                                        | 0: Bi-directional<br>1: Unidirectional                                                                                                                                                                                                                                                | 0       | -            | At stop     | <a href="#">"H09_en.05" on page 732</a> |
| H09.06    | 2009-07h              | Max. speed of inertia auto-tuning                                       | 50[mm/s]/[rpm]–1000[mm/s]/[rpm]                                                                                                                                                                                                                                                       | 500     | [mm/s]/[rpm] | At stop     | <a href="#">"H09_en.06" on page 732</a> |
| H09.07    | 2009-08h              | Time constant for accelerating to max. speed during inertia auto-tuning | 20 ms to 800 ms                                                                                                                                                                                                                                                                       | 125     | ms           | At stop     | <a href="#">"H09_en.07" on page 732</a> |
| H09.08    | 2009-09h              | Interval time after an individual inertia auto-tuning                   | 50 ms to 10000 ms                                                                                                                                                                                                                                                                     | 800     | ms           | At stop     | <a href="#">"H09_en.08" on page 733</a> |
| H09.09    | 2009-0Ah              | Motor rotating distance per inertia auto-tuning                         | 0.00[mm]/[Rev]–100.00[mm]/[Rev]                                                                                                                                                                                                                                                       | 1.00    | [mm]/[Rev]   | Real-time   | <a href="#">"H09_en.09" on page 733</a> |
| H09.11    | 2009-0Ch              | Vibration threshold                                                     | 0.0% to 100.0%                                                                                                                                                                                                                                                                        | 5.0     | %            | Real-time   | <a href="#">"H09_en.11" on page 733</a> |
| H09.12    | 2009-0Dh              | Frequency of the 1st notch                                              | 50 Hz–8000 Hz                                                                                                                                                                                                                                                                         | 8000    | Hz           | Real-time   | <a href="#">"H09_en.12" on page 734</a> |
| H09.13    | 2009-0Eh              | Width level of the 1st notch                                            | 0–20                                                                                                                                                                                                                                                                                  | 2       | -            | Real-time   | <a href="#">"H09_en.13" on page 734</a> |
| H09.14    | 2009-0Fh              | Depth level of the 1st notch                                            | 0–99                                                                                                                                                                                                                                                                                  | 0       | -            | Real-time   | <a href="#">"H09_en.14" on page 734</a> |

| Parameter | Communication Address | Name                                 | Value             | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|--------------------------------------|-------------------|---------|------|--------------|-----------------------------------------|
| H09.15    | 2009-10h              | Frequency of the 2nd notch           | 50 Hz–8000 Hz     | 8000    | Hz   | Real-time    | <a href="#">"H09_en.15" on page 735</a> |
| H09.16    | 2009-11h              | Width level of the 2nd notch         | 0–20              | 2       | -    | Real-time    | <a href="#">"H09_en.16" on page 735</a> |
| H09.17    | 2009-12h              | Depth level of the 2nd notch         | 0–99              | 0       | -    | Real-time    | <a href="#">"H09_en.17" on page 735</a> |
| H09.18    | 2009-13h              | Frequency of the 3rd notch           | 50 Hz–8000 Hz     | 8000    | Hz   | Real-time    | <a href="#">"H09_en.18" on page 735</a> |
| H09.19    | 2009-14h              | Width level of the 3rd notch         | 0–20              | 2       | -    | Real-time    | <a href="#">"H09_en.19" on page 736</a> |
| H09.20    | 2009-15h              | Depth level of the 3rd notch         | 0–99              | 0       | -    | Real-time    | <a href="#">"H09_en.20" on page 736</a> |
| H09.21    | 2009-16h              | Frequency of the 4th notch           | 50 Hz–8000 Hz     | 8000    | Hz   | Real-time    | <a href="#">"H09_en.21" on page 736</a> |
| H09.22    | 2009-17h              | Width level of the 4th notch         | 0–20              | 2       | -    | Real-time    | <a href="#">"H09_en.22" on page 736</a> |
| H09.23    | 2009-18h              | Depth level of the 4th notch         | 0–99              | 0       | -    | Real-time    | <a href="#">"H09_en.23" on page 737</a> |
| H09.24    | 2009-19h              | Auto-tuned resonance frequency       | 0 Hz–5000 Hz      | 0       | Hz   | Unchangeable | <a href="#">"H09_en.24" on page 737</a> |
| H09.32    | 2009-21h              | Gravity compensation value           | -100.0% to 100.0% | 0.0     | %    | Real-time    | <a href="#">"H09_en.32" on page 737</a> |
| H09.33    | 2009-22h              | Positive friction compensation value | 0.0% to 100.0%    | 0.0     | %    | Real-time    | <a href="#">"H09_en.33" on page 738</a> |
| H09.34    | 2009-23h              | Negative friction compensation value | -100.0% to 0.0%   | 0.0     | %    | Real-time    | <a href="#">"H09_en.34" on page 738</a> |
| H09.35    | 2009-24h              | Friction compensation speed          | 0.0–20.0          | 2.0     | -    | Real-time    | <a href="#">"H09_en.35" on page 738</a> |

| Parameter | Communication Address | Name                                                                           | Value                                                                                                                                                                                                                                                     | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H09.36    | 2009-25h              | Friction compensation speed                                                    | 0: Slow mode+Speed reference<br>1: Slow mode+Model speed<br>2: Slow mode+Speed feedback<br>3: Slow mode+Observe speed<br>16: Quick mode +Speed reference<br>17: Quick mode +Model speed<br>18: Quick mode +Speed feedback<br>19: Quick mode+Observe speed | 0       | -    | Real-time   | <a href="#">"H09_en.36" on page 738</a> |
| H09.37    | 2009-26h              | Vibration monitoring time                                                      | 0–65535                                                                                                                                                                                                                                                   | 300     | -    | Real-time   | <a href="#">"H09_en.37" on page 739</a> |
| H09.38    | 2009-27h              | Frequency of low-frequency resonance suppression 1 at the mechanical end       | 1.0 Hz–100.0 Hz                                                                                                                                                                                                                                           | 100.0   | Hz   | Real-time   | <a href="#">"H09_en.38" on page 739</a> |
| H09.39    | 2009-28h              | Low-frequency resonance suppression 1 at the mechanical end                    | 0–3                                                                                                                                                                                                                                                       | 2       | -    | At stop     | <a href="#">"H09_en.39" on page 739</a> |
| H09.44    | 2009-2Dh              | Frequency of low-frequency resonance suppression 2 at mechanical load end      | 0.0–100.0                                                                                                                                                                                                                                                 | 0.0     | -    | Real-time   | <a href="#">"H09_en.44" on page 740</a> |
| H09.45    | 2009-2Eh              | Responsiveness of low-frequency resonance suppression 2 at mechanical load end | 0.01–5.00                                                                                                                                                                                                                                                 | 1.00    | -    | Real-time   | <a href="#">"H09_en.45" on page 740</a> |
| H09.47    | 2009-30h              | Width of low-frequency resonance suppression 2 at mechanical load end          | 0.00–2.00                                                                                                                                                                                                                                                 | 1.00    | -    | Real-time   | <a href="#">"H09_en.47" on page 740</a> |

| Parameter | Communication Address | Name                                                                           | Value                     | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|--------------------------------------------------------------------------------|---------------------------|---------|------|-------------|-----------------------------------------|
| H09.49    | 2009-32h              | Frequency of low-frequency resonance suppression 3 at mechanical load end      | 0.0–100.0                 | 0.0     | -    | Real-time   | <a href="#">"H09_en.49" on page 741</a> |
| H09.50    | 2009-33h              | Responsiveness of low-frequency resonance suppression 3 at mechanical load end | 0.01–5.00                 | 1.00    | -    | Real-time   | <a href="#">"H09_en.50" on page 741</a> |
| H09.52    | 2009-35h              | Width of low-frequency resonance suppression 3 at mechanical load end          | 0.00–2.00                 | 1.00    | -    | Real-time   | <a href="#">"H09_en.52" on page 741</a> |
| H09.54    | 2009-37h              | Resonance detection torque threshold                                           | 0.0% to 300.0%            | 50.0    | %    | Real-time   | <a href="#">"H09_en.54" on page 741</a> |
| H09.56    | 2009-39h              | Max. overshoot allowed by ETune                                                | 0–65535                   | 2936    | -    | Real-time   | <a href="#">"H09_en.56" on page 742</a> |
| H09.57    | 2009-3Ah              | STune resonance suppression switchover frequency                               | 0 Hz–4000 Hz              | 650     | Hz   | Real-time   | <a href="#">"H09_en.57" on page 742</a> |
| H09.58    | 2009-3Bh              | STune resonance suppression reset selection                                    | 0: Disabled<br>1: Enabled | 0       | -    | Real-time   | <a href="#">"H09_en.58" on page 742</a> |
| H09.62    | 2009-3Fh              | Stune stop delay judgment                                                      | 0.00 ms to 50.00 ms       | 1.00    | ms   | Real-time   | <a href="#">"H09_en.62" on page 743</a> |
| H09.63    | 2009-40h              | STune quick convergence speed                                                  | 0.00–50.00                | 1.00    | -    | Real-time   | <a href="#">"H09_en.63" on page 743</a> |
| H09.71    | 2009-48h              | Starting frequency                                                             | 0 Hz–8000 Hz              | 15      | Hz   | Real-time   | <a href="#">"H09_en.71" on page 743</a> |
| H09.72    | 2009-49h              | End frequency                                                                  | 0 Hz–8000 Hz              | 8000    | Hz   | Real-time   | <a href="#">"H09_en.72" on page 743</a> |
| H09.73    | 2009-4Ah              | Frequency subdivision                                                          | 0–500                     | 50      | -    | Real-time   | <a href="#">"H09_en.73" on page 744</a> |

| Parameter | Communication Address | Name                                          | Value                                                                                                            | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H09.74    | 2009-4Bh              | Excitation amplitude                          | 0.0% to 400.0%                                                                                                   | 15.0    | %    | Real-time   | <a href="#">"H09_en.74" on page 744</a> |
| H09.75    | 2009-4Ch              | Starting frequency 2                          | 0 Hz–8000 Hz                                                                                                     | 500     | Hz   | Real-time   | <a href="#">"H09_en.75" on page 744</a> |
| H09.76    | 2009-4Dh              | Frequency subdivision 2                       | 0–1000                                                                                                           | 500     | -    | Real-time   | <a href="#">"H09_en.76" on page 745</a> |
| H09.77    | 2009-4Eh              | Biquad filter mode                            | 0: Disabled<br>1: First-order low-pass<br>2: Second-order low-pass<br>3: Notch<br>4: Lead-lag<br>5: User-defined | 0       | -    | Real-time   | <a href="#">"H09_en.77" on page 745</a> |
| H09.78    | 2009-4Fh              | Biquad filter numerator frequency             | 0 Hz–16000 Hz                                                                                                    | 8000    | Hz   | Real-time   | <a href="#">"H09_en.78" on page 745</a> |
| H09.79    | 2009-50h              | Biquad filter numerator damping coefficient   | 0.001–10.000                                                                                                     | 1.000   | -    | Real-time   | <a href="#">"H09_en.79" on page 745</a> |
| H09.80    | 2009-51h              | Biquad filter denominator frequency           | 0 Hz–16000 Hz                                                                                                    | 8000    | Hz   | Real-time   | <a href="#">"H09_en.80" on page 746</a> |
| H09.81    | 2009-52h              | Biquad filter denominator damping coefficient | 0.001–10.000                                                                                                     | 1.000   | -    | Real-time   | <a href="#">"H09_en.81" on page 746</a> |

### 3.11 H0A Fault and Protection Parameters

| Parameter | Communication Address | Name                                          | Value                                                | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------------------------|------------------------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H0A.00    | 200A-01h              | Power input phase loss and failure protection | 0: Enable<br>1: Disable                              | 0       | -            | Real-time   | <a href="#">"H0A_en.00" on page 746</a> |
| H0A.01    | 200A-02h              | Absolute position limit                       | 0: Disabled<br>1: Enabled<br>2: Enabled after homing | 0       | -            | Real-time   | <a href="#">"H0A_en.01" on page 747</a> |
| H0A.04    | 200A-05h              | Motor overload protection gain                | 50–300                                               | 100     | -            | Real-time   | <a href="#">"H0A_en.04" on page 747</a> |
| H0A.08    | 200A-09h              | Overspeed threshold                           | 0[mm/s]/[rpm]–20000[mm/s]/[rpm]                      | 0       | [mm/s]/[rpm] | Real-time   | <a href="#">"H0A_en.08" on page 747</a> |

| Parameter | Communication Address | Name                                            | Value                                                                                                                | Default   | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-----------|--------------|-------------|-----------------------------------------|
| H0A.10    | 200A-0Bh              | Threshold of excessive local position deviation | 0 to 4294967295                                                                                                      | 219895614 | Encoder unit | Real-time   | <a href="#">"H0A_en.10" on page 748</a> |
| H0A.12    | 200A-0Dh              | Runaway protection enable                       | 0: Disable<br>1: Enable                                                                                              | 1         | -            | Real-time   | <a href="#">"H0A_en.12" on page 748</a> |
| H0A.13    | 200A-0Eh              | Angle auto-tuning mode                          | 0: pre-positioning<br>1: Inching<br>6: Static hall<br>8: Closed-loop pre-positioning<br>9: Position locking          | 0         | -            | At stop     | <a href="#">"H0A_en.13" on page 748</a> |
| H0A.17    | 200A-12h              | Reference pulse selection                       | 0: Pulse unit<br>1: Reference unit                                                                                   | 1         | -            | At stop     | <a href="#">"H0A_en.17" on page 749</a> |
| H0A.18    | 200A-13h              | IGBT over-temperature threshold                 | 120°C–175°C                                                                                                          | 140       | °C           | Real-time   | <a href="#">"H0A_en.18" on page 749</a> |
| H0A.19    | 200A-14h              | Filter time constant of touch probe 1           | 0.00us–6.30us                                                                                                        | 2.00      | us           | Real-time   | <a href="#">"H0A_en.19" on page 750</a> |
| H0A.20    | 200A-15h              | Filter time constant of touch probe 2           | 0.00us–6.30us                                                                                                        | 2.00      | us           | Real-time   | <a href="#">"H0A_en.20" on page 750</a> |
| H0A.21    | 200A-16h              | STO function display selection                  | 0–7                                                                                                                  | 0         | -            | Real-time   | <a href="#">"H0A_en.21" on page 750</a> |
| H0A.23    | 200A-18h              | TZ signal filter time                           | 0–31                                                                                                                 | 15        | 25ns         | At stop     | <a href="#">"H0A_en.23" on page 751</a> |
| H0A.25    | 200A-1Ah              | Speed display DO low-pass filter time           | 0 ms–5000 ms                                                                                                         | 0         | ms           | At stop     | <a href="#">"H0A_en.25" on page 751</a> |
| H0A.26    | 200A-1Bh              | Motor overload detection                        | 0: Show motor overload alarm (E909.0) and fault (E620.0)<br>1: Hide motor overload alarm (E909.0) and fault (E620.0) | 0         | -            | Real-time   | <a href="#">"H0A_en.26" on page 751</a> |
| H0A.27    | 200A-1Ch              | Average filter time for speed display DO        | 0 ms–100 ms                                                                                                          | 50        | ms           | At stop     | <a href="#">"H0A_en.27" on page 751</a> |
| H0A.28    | 200A-1Dh              | Quadrature encoder filter time                  | 0–255                                                                                                                | 2         | 25ns         | At stop     | <a href="#">"H0A_en.28" on page 752</a> |
| H0A.29    | 200A-1Eh              | Fully closed-loop encoder (ABZ) filter time     | 0–65535                                                                                                              | 4111      | 25ns         | At stop     | <a href="#">"H0A_en.29" on page 752</a> |



| Parameter | Communication Address | Name                                                | Value                                                                                                                                                                                                                                                                                                                                                                            | Default     | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------|-------------|-----------------------------------------|
| H0A.32    | 200A-21h              | Time threshold for locked motor overheat protection | 10 ms–65535 ms                                                                                                                                                                                                                                                                                                                                                                   | 200         | ms           | Real-time   | <a href="#">"H0A_en.32" on page 752</a> |
| H0A.33    | 200A-22h              | Locked motor overheat protection                    | 0: Disabled<br>1: Enabled                                                                                                                                                                                                                                                                                                                                                        | 1           | -            | Real-time   | <a href="#">"H0A_en.33" on page 753</a> |
| H0A.36    | 200A-25h              | Encoder multi-turn overflow fault selection         | 0: Not hide<br>1: Hide                                                                                                                                                                                                                                                                                                                                                           | 0           | -            | Real-time   | <a href="#">"H0A_en.36" on page 753</a> |
| H0A.40    | 200A-29h              | Compensation function selection                     | bit0: Overtravel compensation<br>0: Enabled<br>1: Disabled<br>bit1: Touch probe rising edge compensation<br>0: Disabled<br>1: Enabled<br>bit2: Touch probe falling edge compensation<br>0: Disabled<br>1: Enabled<br>bit3: Touch probe scheme<br>0: New scheme<br>1: Old scheme (same as SV660N)<br>bit4: Probe 2 separate compensation time enable<br>0: Disabled<br>1: Enabled | 6           | -            | At stop     | <a href="#">"H0A_en.40" on page 753</a> |
| H0A.41    | 200A-2Ah              | Forward position of software position limit         | -2147483648 to 2147483647                                                                                                                                                                                                                                                                                                                                                        | 2147483647  | Encoder unit | At stop     | <a href="#">"H0A_en.41" on page 754</a> |
| H0A.43    | 200A-2Ch              | Reverse position of software position limit         | -2147483648 to 2147483647                                                                                                                                                                                                                                                                                                                                                        | -2147483648 | Encoder unit | At stop     | <a href="#">"H0A_en.43" on page 755</a> |
| H0A.50    | 200A-33h              | Encoder communication fault tolerance threshold     | 0–31                                                                                                                                                                                                                                                                                                                                                                             | 31          | -            | Real-time   | <a href="#">"H0A_en.50" on page 755</a> |
| H0A.51    | 200A-34h              | Phase loss detection filter times                   | 3–36                                                                                                                                                                                                                                                                                                                                                                             | 20          | 55ms         | Real-time   | <a href="#">"H0A_en.51" on page 755</a> |

| Parameter | Communication Address | Name                                     | Value                                                                                           | Default | Unit         | Change Mode | Page                    |
|-----------|-----------------------|------------------------------------------|-------------------------------------------------------------------------------------------------|---------|--------------|-------------|-------------------------|
| H0A.52    | 200A-35h              | Encoder temperature protection threshold | 0°C–175°C                                                                                       | 120     | °C           | Real-time   | "H0A_en.52" on page 756 |
| H0A.53    | 200A-36h              | Probe DI ON compensation time            | -3000–3000                                                                                      | 200     | 25ns         | Real-time   | "H0A_en.53" on page 756 |
| H0A.54    | 200A-37h              | Probe DI OFF compensation time           | -3000–3000                                                                                      | 1512    | 25ns         | Real-time   | "H0A_en.54" on page 756 |
| H0A.55    | 200A-38h              | Runaway current threshold                | 100.0% to 400.0%                                                                                | 200.0   | %            | Real-time   | "H0A_en.55" on page 756 |
| H0A.56    | 200A-39h              | Fault reset delay                        | 0 ms–60000 ms                                                                                   | 10000   | ms           | Real-time   | "H0A_en.56" on page 757 |
| H0A.57    | 200A-3Ah              | Runaway speed threshold                  | 1[mm/s]/[rpm]–1000[mm/s]/[rpm]                                                                  | 50      | [mm/s]/[rpm] | Real-time   | "H0A_en.57" on page 757 |
| H0A.58    | 200A-3Bh              | Runaway speed filter time                | 0.1 ms–100.0 ms                                                                                 | 2.0     | ms           | Real-time   | "H0A_en.58" on page 757 |
| H0A.59    | 200A-3Ch              | Runaway protection detection time        | 10 ms–1000 ms                                                                                   | 30      | ms           | Real-time   | "H0A_en.59" on page 757 |
| H0A.60    | 200A-3Dh              | Black box function mode                  | 0: Disable<br>1: Any fault<br>2: Designated fault<br>3: Triggered based on designated condition | 1       | -            | Real-time   | "H0A_en.60" on page 758 |
| H0A.61    | 200A-3Eh              | Designated fault code                    | 0.0–6553.5                                                                                      | 0.0     | -            | Real-time   | "H0A_en.61" on page 758 |
| H0A.62    | 200A-3Fh              | Trigger source                           | 0–27                                                                                            | 0       | -            | Real-time   | "H0A_en.62" on page 758 |
| H0A.63    | 200A-40h              | Trigger level                            | -2147483648–2147483647                                                                          | 0       | -            | Real-time   | "H0A_en.63" on page 759 |
| H0A.65    | 200A-42h              | Trigger level                            | 0: Rising edge<br>1: Equal<br>2: Falling edge<br>3: Edge-triggered                              | 0       | -            | Real-time   | "H0A_en.65" on page 759 |
| H0A.66    | 200A-43h              | Trigger position                         | 0% to 100%                                                                                      | 75      | %            | Real-time   | "H0A_en.66" on page 759 |
| H0A.67    | 200A-44h              | Sampling frequency                       | 0: Current loop<br>1: Position loop<br>2: Main cycle                                            | 0       | -            | Real-time   | "H0A_en.67" on page 760 |

| Parameter | Communication Address | Name                                                   | Value                           | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|--------------------------------------------------------|---------------------------------|---------|--------------|-------------|-----------------------------------------|
| H0A.70    | 200A-47h              | Overspeed threshold 2                                  | 0[mm/s]/[rpm]–20000[mm/s]/[rpm] | 0       | [mm/s]/[rpm] | Real-time   | <a href="#">"H0A_en.70" on page 760</a> |
| H0A.71    | 200A-48h              | Internal function switch                               | 0–65535                         | 4098    | -            | Real-time   | <a href="#">"H0A_en.71" on page 760</a> |
| H0A.72    | 200A-49h              | Maximum stop time in ramp-to-stop                      | 0 ms–65535 ms                   | 10000   | ms           | At stop     | <a href="#">"H0A_en.72" on page 762</a> |
| H0A.73    | 200A-4Ah              | STO 24 V disconnection filter time                     | 1 ms–5 ms                       | 1       | ms           | Real-time   | <a href="#">"H0A_en.73" on page 762</a> |
| H0A.74    | 200A-4Bh              | Filter time for two inconsistent STO channels          | 1 ms–1000 ms                    | 100     | ms           | Real-time   | <a href="#">"H0A_en.74" on page 762</a> |
| H0A.75    | 200A-4Ch              | Servo OFF delay after STO triggered                    | 0 ms–25 ms                      | 20      | ms           | Real-time   | <a href="#">"H0A_en.75" on page 762</a> |
| H0A.87    | 200A-58h              | UWV Hall state monitoring window                       | 0–1000                          | 1       | -            | Real-time   | <a href="#">"H0A_en.87" on page 763</a> |
| H0A.88    | 200A-59h              | DDL BISS-C data alarm enable                           | 0–1                             | 0       | -            | At stop     | <a href="#">"H0A_en.88" on page 763</a> |
| H0A.89    | 200A-5Ah              | Correct state of DDL BISS-C data                       | 0–31                            | 1       | -            | At stop     | <a href="#">"H0A_en.89" on page 763</a> |
| H0A.90    | 200A-5Bh              | Speed display low-pass filter time                     | 0 ms–100 ms                     | 0       | ms           | At stop     | <a href="#">"H0A_en.90" on page 764</a> |
| H0A.91    | 200A-5Ch              | Moving average filter time for torque display values   | 0 ms–100 ms                     | 0       | ms           | At stop     | <a href="#">"H0A_en.91" on page 764</a> |
| H0A.92    | 200A-5Dh              | Moving average filter time for position display values | 0 ms–100 ms                     | 0       | ms           | At stop     | <a href="#">"H0A_en.92" on page 764</a> |
| H0A.93    | 200A-5Eh              | Low-pass filter time for voltage display values        | 0 ms–250 ms                     | 0       | ms           | At stop     | <a href="#">"H0A_en.93" on page 764</a> |
| H0A.94    | 200A-5Fh              | Low-pass filter time for thermal display values        | 0 ms–250 ms                     | 0       | ms           | At stop     | <a href="#">"H0A_en.94" on page 765</a> |

### 3.12 H0b Monitoring Parameters

| Parameter | Communication Address | Name                                    | Value                                | Default | Unit         | Change Mode  | Page                                    |
|-----------|-----------------------|-----------------------------------------|--------------------------------------|---------|--------------|--------------|-----------------------------------------|
| H0b.00    | 200b-01h              | Motor speed actual value                | -32767[mm/s]/[rpm]–32767[mm/s]/[rpm] | 0       | [mm/s]/[rpm] | Unchangeable | <a href="#">"H0b_en.00" on page 765</a> |
| H0b.01    | 200b-02h              | Speed reference                         | -32767[mm/s]/[rpm]–32767[mm/s]/[rpm] | 0       | [mm/s]/[rpm] | Unchangeable | <a href="#">"H0b_en.01" on page 765</a> |
| H0b.02    | 200b-03h              | Internal torque reference               | -500.0%–500.0%                       | 0.0     | %            | Unchangeable | <a href="#">"H0b_en.02" on page 766</a> |
| H0b.03    | 200b-04h              | Input (DI) signal monitoring            | 0–65535                              | 0       | -            | Unchangeable | <a href="#">"H0b_en.03" on page 766</a> |
| H0b.05    | 200b-06h              | Output (DO) signal monitoring           | 0–65535                              | 0       | -            | Unchangeable | <a href="#">"H0b_en.05" on page 766</a> |
| H0b.07    | 200b-08h              | Absolute position counter               | -2147483648p to 2147483647p          | 0       | p            | Unchangeable | <a href="#">"H0b_en.07" on page 767</a> |
| H0b.09    | 200b-0Ah              | Mechanical angle                        | 0.0° to 360.0°                       | 0.0     | °            | Unchangeable | <a href="#">"H0b_en.09" on page 767</a> |
| H0b.10    | 200b-0Bh              | Electrical angle                        | 0.0° to 360.0°                       | 0.0     | °            | Unchangeable | <a href="#">"H0b_en.10" on page 767</a> |
| H0b.12    | 200b-0Dh              | Average load ratio                      | 0.0% to 800.0%                       | 0.0     | %            | Unchangeable | <a href="#">"H0b_en.12" on page 768</a> |
| H0b.15    | 200b-10h              | Position following error (encoder unit) | -2147483648p to 2147483647p          | 0       | p            | Unchangeable | <a href="#">"H0b_en.15" on page 768</a> |
| H0b.17    | 200b-12h              | Feedback pulse counter                  | -2147483648p to 2147483647p          | 0       | p            | Unchangeable | <a href="#">"H0b_en.17" on page 768</a> |
| H0b.19    | 200b-14h              | Total power-on time                     | 0.0s–429496729.5s                    | 0.0     | s            | Unchangeable | <a href="#">"H0b_en.19" on page 769</a> |
| H0b.21    | 200b-16h              | Displayed AI1 voltage                   | -12.00 V–12.00 V                     | 0.00    | V            | Unchangeable | <a href="#">"H0b_en.21" on page 769</a> |
| H0b.22    | 200b-17h              | Displayed AI2 voltage                   | -12.00 V–12.00 V                     | 0.00    | V            | Unchangeable | <a href="#">"H0b_en.22" on page 769</a> |

| Parameter | Communication Address | Name                                                        | Value                                                    | Default | Unit         | Change Mode  | Page                                    |
|-----------|-----------------------|-------------------------------------------------------------|----------------------------------------------------------|---------|--------------|--------------|-----------------------------------------|
| H0b.24    | 200b-19h              | Phase current RMS value                                     | 0.0 A–6553.5 A                                           | 0.0     | A            | Unchangeable | <a href="#">"H0b_en.24" on page 770</a> |
| H0b.26    | 200b-1Bh              | Bus voltage                                                 | 0.0 V–6553.5 V                                           | 0.0     | V            | Unchangeable | <a href="#">"H0b_en.26" on page 770</a> |
| H0b.27    | 200b-1Ch              | Module temperature                                          | -20°C–200°C                                              | 0       | °C           | Unchangeable | <a href="#">"H0b_en.27" on page 770</a> |
| H0b.28    | 200b-1Dh              | Absolute encoder fault information given by FPGA            | 0–65535                                                  | 0       | -            | Unchangeable | <a href="#">"H0b_en.28" on page 770</a> |
| H0b.29    | 200b-1Eh              | Axis status information given by FPGA                       | 0–65535                                                  | 0       | -            | Unchangeable | <a href="#">"H0b_en.29" on page 771</a> |
| H0b.30    | 200b-1Fh              | Axis fault information given by FPGA                        | 0–65535                                                  | 0       | -            | Unchangeable | <a href="#">"H0b_en.30" on page 771</a> |
| H0b.31    | 200b-20h              | Encoder fault information                                   | 0–65535                                                  | 0       | -            | Unchangeable | <a href="#">"H0b_en.31" on page 771</a> |
| H0b.33    | 200b-22h              | Fault log                                                   | See <a href="#">"H0b_en.33" on page 772</a> for details. | 0       | -            | Real-time    | <a href="#">"H0b_en.33" on page 772</a> |
| H0b.34    | 200b-23h              | Fault code of the selected fault                            | 0–65535                                                  | 0       | -            | Unchangeable | <a href="#">"H0b_en.34" on page 772</a> |
| H0b.35    | 200b-24h              | Timestamp of the selected fault                             | 0.0s–429496729.5s                                        | 0.0     | s            | Unchangeable | <a href="#">"H0b_en.35" on page 773</a> |
| H0b.37    | 200b-26h              | Motor speed upon occurrence of the selected fault           | -32767[mm/s]/[rpm]–32767[mm/s]/[rpm]                     | 0       | [mm/s]/[rpm] | Unchangeable | <a href="#">"H0b_en.37" on page 773</a> |
| H0b.38    | 200b-27h              | Motor phase U current upon occurrence of the selected fault | -3276.7 A–3276.7 A                                       | 0.0     | A            | Unchangeable | <a href="#">"H0b_en.38" on page 773</a> |
| H0b.39    | 200b-28h              | Motor phase V current upon occurrence of the selected fault | -3276.7 A–3276.7 A                                       | 0.0     | A            | Unchangeable | <a href="#">"H0b_en.39" on page 773</a> |

| Parameter | Communication Address | Name                                                                                   | Value          | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|----------------------------------------------------------------------------------------|----------------|---------|------|--------------|-----------------------------------------|
| H0b.40    | 200b-29h              | Bus voltage upon occurrence of the selected fault                                      | 0.0 V–6553.5 V | 0.0     | V    | Unchangeable | <a href="#">"H0b_en.40" on page 774</a> |
| H0b.41    | 200b-2Ah              | Input terminal state on selected fault                                                 | 0–65535        | 0       | -    | Unchangeable | <a href="#">"H0b_en.41" on page 774</a> |
| H0b.43    | 200b-2Ch              | Output terminal status upon occurrence of the selected fault                           | 0–65535        | 0       | -    | Unchangeable | <a href="#">"H0b_en.43" on page 774</a> |
| H0b.45    | 200b-2Eh              | Internal fault code                                                                    | 0–65535        | 0       | -    | Unchangeable | <a href="#">"H0b_en.45" on page 774</a> |
| H0b.46    | 200b-2Fh              | Absolute encoder fault information given by FPGA upon occurrence of the selected fault | 0–65535        | 0       | -    | Unchangeable | <a href="#">"H0b_en.46" on page 775</a> |
| H0b.47    | 200b-30h              | System status information given by FPGA upon occurrence of the selected fault          | 0–65535        | 0       | -    | Unchangeable | <a href="#">"H0b_en.47" on page 775</a> |
| H0b.48    | 200b-31h              | System fault information given by FPGA upon occurrence of the selected fault           | 0–65535        | 0       | -    | Unchangeable | <a href="#">"H0b_en.48" on page 775</a> |
| H0b.49    | 200b-32h              | Encoder fault information upon occurrence of the selected fault                        | 0–65535        | 0       | -    | Unchangeable | <a href="#">"H0b_en.49" on page 776</a> |

| Parameter | Communication Address | Name                                                                  | Value                                                                                                                                                                                                                                                                                   | Default | Unit         | Change Mode  | Page                                    |
|-----------|-----------------------|-----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------|--------------|-----------------------------------------|
| H0b.51    | 200b-34h              | Internal fault code upon occurrence of the selected fault             | 0–65535                                                                                                                                                                                                                                                                                 | 0       | -            | Unchangeable | <a href="#">"H0b_en.51" on page 776</a> |
| H0b.52    | 200b-35h              | FPGA timeout fault standard bit upon occurrence of the selected fault | 0–65535                                                                                                                                                                                                                                                                                 | 0       | -            | Unchangeable | <a href="#">"H0b_en.52" on page 776</a> |
| H0b.53    | 200b-36h              | Position following error (reference unit)                             | -2147483648p to 2147483647p                                                                                                                                                                                                                                                             | 0       | p            | Unchangeable | <a href="#">"H0b_en.53" on page 776</a> |
| H0b.55    | 200b-38h              | Motor speed actual value                                              | -2147483648.0[mm/s]/[rpm]–2147483647.0[mm/s]/[rpm]                                                                                                                                                                                                                                      | 0.0     | [mm/s]/[rpm] | Unchangeable | <a href="#">"H0b_en.55" on page 777</a> |
| H0b.57    | 200b-3Ah              | Control circuit bus voltage                                           | 0.0 V–6553.5 V                                                                                                                                                                                                                                                                          | 0.0     | V            | Unchangeable | <a href="#">"H0b_en.57" on page 777</a> |
| H0b.58    | 200b-3Bh              | Mechanical absolute position (low 32 bits)                            | 0p to 4294967295p                                                                                                                                                                                                                                                                       | 0       | p            | Unchangeable | <a href="#">"H0b_en.58" on page 777</a> |
| H0b.60    | 200b-3Dh              | Mechanical absolute position (high 32 bits)                           | -2147483648p to 2147483647p                                                                                                                                                                                                                                                             | 0       | p            | Unchangeable | <a href="#">"H0b_en.60" on page 778</a> |
| H0b.63    | 200b-40h              | NotRdy state                                                          | 0: Normal<br>1: Control circuit error<br>2: Main circuit power input error<br><br>3: Bus undervoltage<br>4: Soft start failed<br>5: Encoder initialization not completed<br>6: Short circuit to ground failed<br>7: Others<br>9: Fully closed-loop encoder initialization not completed | 0       | -            | Unchangeable | <a href="#">"H0b_en.63" on page 778</a> |
| H0b.66    | 200b-43h              | Encoder temperature                                                   | -32768°C–32767°C                                                                                                                                                                                                                                                                        | 0       | °C           | Unchangeable | <a href="#">"H0b_en.66" on page 778</a> |

| Parameter | Communication Address | Name                                                     | Value                       | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|----------------------------------------------------------|-----------------------------|---------|------|--------------|-----------------------------------------|
| H0b.67    | 200b-44h              | Load rate of braking resistor                            | 0.0% to 200.0%              | 0.0     | %    | Unchangeable | <a href="#">"H0b_en.67" on page 779</a> |
| H0b.70    | 200b-47h              | Number of absolute encoder revolutions                   | -32768Rev to 32767Rev       | 0       | Rev  | Unchangeable | <a href="#">"H0b_en.70" on page 779</a> |
| H0b.71    | 200b-48h              | Single-turn position feedback by the absolute encoder    | 0p to 2147483647p           | 0       | p    | Unchangeable | <a href="#">"H0b_en.71" on page 779</a> |
| H0b.74    | 200b-4Bh              | System fault information given by FPGA                   | 0-65535                     | 0       | -    | Unchangeable | <a href="#">"H0b_en.74" on page 779</a> |
| H0b.77    | 200b-4Eh              | Encoder position (low 32 bits)                           | 0p to 4294967295p           | 0       | p    | Unchangeable | <a href="#">"H0b_en.77" on page 780</a> |
| H0b.79    | 200b-50h              | Encoder position (high 32 bits)                          | -2147483648p to 2147483647p | 0       | p    | Unchangeable | <a href="#">"H0b_en.79" on page 780</a> |
| H0b.81    | 200b-52h              | Single-turn position of the rotary load (low 32 bits)    | 0p to 4294967295p           | 0       | p    | Unchangeable | <a href="#">"H0b_en.81" on page 780</a> |
| H0b.83    | 200b-54h              | Single-turn position of the rotary load (high 32 bits)   | -2147483648p to 2147483647p | 0       | p    | Unchangeable | <a href="#">"H0b_en.83" on page 781</a> |
| H0b.85    | 200b-56h              | Single-turn position of the rotary load (reference unit) | 0p to 4294967295p           | 0       | p    | Unchangeable | <a href="#">"H0b_en.85" on page 781</a> |
| H0b.87    | 200b-58h              | IGBT junction temperature                                | 0-200                       | 0       | -    | Unchangeable | <a href="#">"H0b_en.87" on page 781</a> |
| H0b.90    | 200b-5Bh              | Group No. of the abnormal parameter                      | 0-65535                     | 0       | -    | Unchangeable | <a href="#">"H0b_en.90" on page 781</a> |
| H0b.91    | 200b-5Ch              | Offset within the group of the abnormal parameter        | 0-65535                     | 0       | -    | Unchangeable | <a href="#">"H0b_en.91" on page 782</a> |
| H0b.92    | 200b-5Dh              | Hall state                                               | 0-65535                     | 0       | -    | Unchangeable | <a href="#">"H0b_en.92" on page 782</a> |



| Parameter | Communication Address | Name                                                           | Value             | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|----------------------------------------------------------------|-------------------|---------|------|--------------|-----------------------------------------|
| H0b.94    | 200b-5Fh              | Individual power-on time                                       | 0.0s–429496729.5s | 0.0     | s    | Unchangeable | <a href="#">"H0b_en.94" on page 782</a> |
| H0b.96    | 200b-61h              | Individual power-on time upon occurrence of the selected fault | 0.0s–429496729.5s | 0.0     | s    | Unchangeable | <a href="#">"H0b_en.96" on page 782</a> |

### 3.13 H0C Fault and Protection Parameters 2

| Parameter | Comm. Add. | Name                             | Value      | Default | Unit | Change Mode | Page                                    |
|-----------|------------|----------------------------------|------------|---------|------|-------------|-----------------------------------------|
| H0C.53    | 200C-36h   | Probe DI ON compensation time 2  | -3000–3000 | 200     | 25ns | Real-time   | <a href="#">"H0C_en.53" on page 783</a> |
| H0C.54    | 200C-37h   | Probe DI OFF compensation time 2 | -3000–3000 | 1512    | 25ns | Real-time   | <a href="#">"H0C_en.54" on page 783</a> |
| H0C.71    | 200C-48h   | Internal function switch         | 0–65535    | 0       | -    | Real-time   | <a href="#">"H0C_en.71" on page 783</a> |

### 3.14 H0d Auxiliary Function Parameters

| Parameter | Communication Address | Name                       | Value                                                            | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------|------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H0d.00    | 200d-01h              | Software Reset             | 0: No operation<br>1: Enable                                     | 0       | -    | At stop     | <a href="#">"H0d_en.00" on page 784</a> |
| H0d.01    | 200d-02h              | Fault Reset                | 0: No operation<br>1: Enable                                     | 0       | -    | At stop     | <a href="#">"H0d_en.01" on page 784</a> |
| H0d.02    | 200d-03h              | Inertia auto-tuning enable | 0–65                                                             | 0       | -    | Real-time   | <a href="#">"H0d_en.02" on page 784</a> |
| H0d.04    | 200d-05h              | Read/write in encoder ROM  | 0: No operation<br>1: Write ROM<br>2: Read ROM<br>3: ROM failure | 0       | -    | At stop     | <a href="#">"H0d_en.04" on page 785</a> |
| H0d.05    | 200d-06h              | Emergency stop             | 0: No operation<br>1: Emergency stop                             | 0       | -    | Real-time   | <a href="#">"H0d_en.05" on page 785</a> |

| Parameter | Communication Address | Name                                                 | Value                                                                                                                                                                     | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H0d.06    | 200d-07h              | Current loop auto-tuning test                        | 0: No operation<br>1: Enable current loop auto-tuning<br>2: Enable current loop step test (static)<br>3: Enable current loop step test                                    | 0       | -    | At stop     | <a href="#">"H0d_en.06" on page 785</a> |
| H0d.10    | 200d-0Bh              | Analog channel auto adjusting                        | 0: No operation<br>1: Adjusted through AI1<br>2: Adjusted through AI2                                                                                                     | 0       | -    | At stop     | <a href="#">"H0d_en.10" on page 786</a> |
| H0d.12    | 200d-0Dh              | Phase U/V current balance correction                 | 0: Disabled<br>1: Enabled                                                                                                                                                 | 0       | -    | At stop     | <a href="#">"H0d_en.12" on page 786</a> |
| H0d.17    | 200d-12h              | Forced DI/DO enable switch                           | bit0: Forced DI enable switch<br>0: Disabled<br>1: Enabled<br>bit1: Forced DO enable switch<br>0: Disabled<br>1: Enabled                                                  | 0       | -    | Real-time   | <a href="#">"H0d_en.17" on page 787</a> |
| H0d.18    | 200d-13h              | Forced DI value                                      | 0–31                                                                                                                                                                      | 31      | -    | Real-time   | <a href="#">"H0d_en.18" on page 787</a> |
| H0d.19    | 200d-14h              | Forced DO value                                      | 0–3                                                                                                                                                                       | 0       | -    | Real-time   | <a href="#">"H0d_en.19" on page 787</a> |
| H0d.20    | 200d-15h              | Absolute encoder reset                               | 0: No operation<br>1: Reset fault<br>2: Reset fault and multi-turn data<br>3: Reset Inovance 2nd encoder fault<br>4: Reset Inovance 2nd encoder fault and multi-turn data | 0       | -    | At stop     | <a href="#">"H0d_en.20" on page 788</a> |
| H0d.21    | 200d-16h              | Read error status bit of Nikon and ENdat2.2 encoders | 0: No operation<br>1: Reading error status bit                                                                                                                            | 0       | -    | At stop     | <a href="#">"H0d_en.21" on page 788</a> |
| H0d.29    | 200d-1Eh              | Motor parameter auto-tuning                          | 0: No operation<br>1: Enabled                                                                                                                                             | 0       | -    | At stop     | <a href="#">"H0d_en.29" on page 788</a> |

### 3.15 H0E Communication Function Parameters

| Parameter | Communication Address | Name                                                                 | Value                                                                                                                                                                                                                                                                                                             | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|--------------|-----------------------------------------|
| H0E.00    | 200E-01h              | Node address                                                         | 1–127                                                                                                                                                                                                                                                                                                             | 1       | -    | At stop      | <a href="#">"H0E_en.00" on page 789</a> |
| H0E.01    | 200E-02h              | Save objects written through communication to e2prom                 | 0: Not save<br>1: Save parameters written through communication to e2prom<br>2: Save object dictionaries written through communication to e2prom<br>3: Save parameters and object dictionaries written through communication to e2prom<br>4: Save object dictionaries written before communication (OP) to e2prom | 4       | -    | Real-time    | <a href="#">"H0E_en.01" on page 789</a> |
| H0E.07    | 200E-08h              | Object dictionary unit selection                                     | 0: Reference unit system (p/s, p/s2)<br>1: User unit system (0.01 [mm/s]/[rpm], ms)                                                                                                                                                                                                                               | 0       | -    | At stop      | <a href="#">"H0E_en.07" on page 789</a> |
| H0E.15    | 200E-10h              | Select group 6000 index (last 2 bits)                                | 0–255                                                                                                                                                                                                                                                                                                             | 255     | -    | Real-time    | <a href="#">"H0E_en.15" on page 790</a> |
| H0E.16    | 200E-11h              | Select group 6000 sub-index                                          | 0–2                                                                                                                                                                                                                                                                                                               | 0       | -    | Real-time    | <a href="#">"H0E_en.16" on page 790</a> |
| H0E.20    | 200E-15h              | EtherCAT slave name                                                  | 0–65535                                                                                                                                                                                                                                                                                                           | 0       | -    | Unchangeable | <a href="#">"H0E_en.20" on page 790</a> |
| H0E.21    | 200E-16h              | EtherCAT slave alias                                                 | 0–65535                                                                                                                                                                                                                                                                                                           | 0       | -    | At stop      | <a href="#">"H0E_en.21" on page 791</a> |
| H0E.22    | 200E-17h              | Number of synchronous loss events allowed by EtherCAT                | 1–20                                                                                                                                                                                                                                                                                                              | 8       | -    | Real-time    | <a href="#">"H0E_en.22" on page 791</a> |
| H0E.24    | 200E-19h              | Sync loss count                                                      | 0–65535                                                                                                                                                                                                                                                                                                           | 0       | -    | Unchangeable | <a href="#">"H0E_en.24" on page 791</a> |
| H0E.25    | 200E-1Ah              | Max. error value and invalid frames of EtherCAT port 0 per unit time | 0–65535                                                                                                                                                                                                                                                                                                           | 0       | -    | Unchangeable | <a href="#">"H0E_en.25" on page 791</a> |

| Parameter | Communication Address | Name                                                                 | Value                     | Default | Unit | Change Mode  | Page                    |
|-----------|-----------------------|----------------------------------------------------------------------|---------------------------|---------|------|--------------|-------------------------|
| H0E.26    | 200E-1Bh              | Max. error value and invalid frames of EtherCAT port 1 per unit time | 0–65535                   | 0       | -    | Unchangeable | "H0E_en.26" on page 792 |
| H0E.27    | 200E-1Ch              | Max. transfer error of EtherCAT port per unit time                   | 0–65535                   | 0       | -    | Unchangeable | "H0E_en.27" on page 792 |
| H0E.28    | 200E-1Dh              | Max. EtherCAT data frame processing unit error per unit time         | 0–255                     | 0       | -    | Unchangeable | "H0E_en.28" on page 792 |
| H0E.29    | 200E-1Eh              | Max. link loss value of EtherCAT port 0 per unit time                | 0–65535                   | 0       | -    | Unchangeable | "H0E_en.29" on page 793 |
| H0E.31    | 200E-20h              | EtherCAT synchronization mode setting                                | 0–3                       | 2       | -    | At stop      | "H0E_en.31" on page 793 |
| H0E.32    | 200E-21h              | EtherCAT synchronization error threshold                             | 100 ns to 8000 ns         | 4000    | ns   | At stop      | "H0E_en.32" on page 793 |
| H0E.33    | 200E-22h              | EtherCAT state machine status and port connection status             | 0–65535                   | 0       | -    | Unchangeable | "H0E_en.33" on page 793 |
| H0E.34    | 200E-23h              | Excessive CSP position command increment count                       | 1–30                      | 20      | -    | Real-time    | "H0E_en.34" on page 794 |
| H0E.35    | 200E-24h              | AL fault code                                                        | 0–65535                   | 0       | -    | Unchangeable | "H0E_en.35" on page 794 |
| H0E.36    | 200E-25h              | EtherCAT enhanced link enable                                        | 0: Disabled<br>1: Enabled | 0       | -    | Real-time    | "H0E_en.36" on page 794 |
| H0E.37    | 200E-26h              | EtherCAT XML reset selection                                         | 0: Disabled<br>1: Enabled | 0       | -    | Real-time    | "H0E_en.37" on page 794 |

| Parameter | Communication Address | Name                                       | Value                                                                                                                                                 | Default | Unit | Change Mode  | Page                       |
|-----------|-----------------------|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|--------------|----------------------------|
| H0E.80    | 200E-51h              | Modbus baud rate                           | 0: 300 bps<br>1: 600 bps<br>2: 1200 bps<br>3: 2400 bps<br>4: 4800 bps<br>5: 9600 bps<br>6: 19200 bps<br>7: 38400 bps<br>8: 57600 bps<br>9: 115200 bps | 9       | -    | Real-time    | "H0E_en.80"<br>on page 795 |
| H0E.81    | 200E-52h              | Modbus data format                         | 0: No parity, 2 stop bits (N-2)<br>1: Even parity, 1 stop bit (E-1)<br>2: Odd parity, 1 stop bit (O-1)<br>3: No parity, 1 stop bit (N-1)              | 3       | -    | Real-time    | "H0E_en.81"<br>on page 795 |
| H0E.82    | 200E-53h              | Modbus response delay                      | 0 ms to 20 ms                                                                                                                                         | 0       | ms   | Real-time    | "H0E_en.82"<br>on page 796 |
| H0E.83    | 200E-54h              | Modbus communication timeout               | 0 ms to 600 ms                                                                                                                                        | 0       | ms   | Real-time    | "H0E_en.83"<br>on page 796 |
| H0E.84    | 200E-55h              | Sequence of Modbus communication data bits | 0: High bits before low bits<br>1: Low bits before high bits                                                                                          | 1       | -    | Real-time    | "H0E_en.84"<br>on page 796 |
| H0E.90    | 200E-5Bh              | Communication version                      | 0.00–655.35                                                                                                                                           | 0.00    | -    | Unchangeable | "H0E_en.90"<br>on page 797 |
| H0E.96    | 200E-61h              | XML version information                    | 0.00–655.35                                                                                                                                           | 0.00    | -    | Unchangeable | "H0E_en.96"<br>on page 797 |

### 3.16 H0F Fully Closed-loop Parameters

| Parameter | Communication Address | Name                                       | Value                                                                                          | Default | Unit | Change Mode | Page                       |
|-----------|-----------------------|--------------------------------------------|------------------------------------------------------------------------------------------------|---------|------|-------------|----------------------------|
| H0F.00    | 200F-01h              | Encoder feedback mode                      | 0: Internal encoder feedback<br>1: External encoder feedback<br>2: Inner/Outer loop switchover | 0       | -    | Real-time   | "H0F_en.00"<br>on page 797 |
| H0F.01    | 200F-02h              | Fully closed-loop encoder application mode | 0: Standard operating direction<br>1: Reverse operating direction                              | 0       | -    | Real-time   | "H0F_en.01"<br>on page 798 |

| Parameter | Communication Address | Name                                                                 | Value                                                                    | Default | Unit         | Change Mode  | Page                                    |
|-----------|-----------------------|----------------------------------------------------------------------|--------------------------------------------------------------------------|---------|--------------|--------------|-----------------------------------------|
| H0F.02    | 200F-03h              | Fully closed-loop encoder absolute value                             | 0: Incremental mode<br>1: Absolute linear mode                           | 0       | -            | At stop      | <a href="#">"H0F_en.02" on page 798</a> |
| H0F.03    | 200F-04h              | Fully closed-loop encoder feedback type                              | 0: Quadrature pulse<br>1: Inovance<br>2: BiSS-C<br>3: ENDAT2.2<br>4: SSI | 0       | -            | At stop      | <a href="#">"H0F_en.03" on page 799</a> |
| H0F.04    | 200F-05h              | Number of fully closed-loop encoder pulses per revolution            | 1–2147483647                                                             | 10000   | -            | At stop      | <a href="#">"H0F_en.04" on page 799</a> |
| H0F.06    | 200F-07h              | Fully closed-loop encoder interface                                  | 0: CN2<br>1: CN7                                                         | 1       | -            | At stop      | <a href="#">"H0F_en.06" on page 800</a> |
| H0F.08    | 200F-09h              | Excessive deviation threshold in compound control mode               | 0–2147483647                                                             | 1000    | -            | Real-time    | <a href="#">"H0F_en.08" on page 800</a> |
| H0F.10    | 200F-0Bh              | Clear deviation in compound control mode                             | 0Rev to 100Rev                                                           | 1       | Rev          | Real-time    | <a href="#">"H0F_en.10" on page 801</a> |
| H0F.13    | 200F-0Eh              | Compound vibration suppression filter time                           | 0.0 ms to 6553.5 ms                                                      | 0.0     | ms           | At stop      | <a href="#">"H0F_en.13" on page 801</a> |
| H0F.16    | 200F-11h              | Pulse deviation display in compound control mode                     | -2147483648 to 2147483647                                                | 0       | Encoder unit | Unchangeable | <a href="#">"H0F_en.16" on page 801</a> |
| H0F.18    | 200F-13h              | Internal position pulse feedback display                             | -2147483648 to 2147483647                                                | 0       | Encoder unit | Unchangeable | <a href="#">"H0F_en.18" on page 802</a> |
| H0F.20    | 200F-15h              | Fully closed-loop encoder position pulse feedback display            | -2147483648 to 2147483647                                                | 0       | Encoder unit | Unchangeable | <a href="#">"H0F_en.20" on page 802</a> |
| H0F.22    | 200F-17h              | Quadrature pulse phase Z detection invalid in fully closed-loop mode | 0: Detected<br>1: Not detected                                           | 0       | -            | Real-time    | <a href="#">"H0F_en.22" on page 802</a> |

| Parameter | Communication Address | Name                                                                                               | Value                                              | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------|---------|------|--------------|-----------------------------------------|
| H0F.23    | 200F-18h              | BiSSC/SSI/EDNAT2.2 full closed-loop encoder absolute homing offset                                 | -2147483648–2147483647                             | 0       | -    | Real-time    | <a href="#">"H0F_en.23" on page 803</a> |
| H0F.25    | 200F-1Ah              | Set the source of touch probe Z signal in fully closed-loop mode.                                  | 0: Motor Z signal<br>1: External feedback Z signal | 0       | -    | Real-time    | <a href="#">"H0F_en.25" on page 803</a> |
| H0F.26    | 200F-1Bh              | BiSSC/SSI/EDNAT2.2 full closed-loop encoder absolute feedback offset                               | -2147483648–2147483647                             | 0       | -    | Real-time    | <a href="#">"H0F_en.26" on page 803</a> |
| H0F.28    | 200F-1Dh              | Index value of BiSS/SSI communication alarm                                                        | 0–65535                                            | 0       | -    | Unchangeable | <a href="#">"H0F_en.28" on page 804</a> |
| H0F.29    | 200F-1Eh              | CRC of BiSS-C/SSI fully closed-loop encoder feedback                                               | 0: Positive<br>1: Negative                         | 1       | -    | Real-time    | <a href="#">"H0F_en.29" on page 804</a> |
| H0F.30    | 200F-1Fh              | BiSS-C/SSI/EDNAT2.2 valid bits of encoder communication position feedback in full closed-loop mode | 0–127                                              | 29      | -    | At stop      | <a href="#">"H0F_en.30" on page 804</a> |
| H0F.31    | 200F-20h              | Valid bit of BiSS-C/SSI encoder communication alarm index in full closed-loop mode                 | 0–31                                               | 2       | -    | At stop      | <a href="#">"H0F_en.31" on page 805</a> |
| H0F.32    | 200F-21h              | BiSS-C/SSI/ENDAT encoder communication frequency in fully closed-loop mode                         | 0 kHz–10000 kHz                                    | 2000    | kHz  | Real-time    | <a href="#">"H0F_en.32" on page 806</a> |

| Parameter | Communication Address | Name                                                                          | Value                                                                                      | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|---------|------|--------------|-----------------------------------------|
| H0F.33    | 200F-22h              | SSI/ENDAT encoder recovery time in fully closed-loop mode                     | 0.000us to 40.000us                                                                        | 0.500   | us   | Real-time    | <a href="#">"H0F_en.33" on page 806</a> |
| H0F.35    | 200F-24h              | BiSS-C error detection enable in fully closed-loop mode                       | 0: Disabled<br>1: Enabled                                                                  | 0       | -    | At stop      | <a href="#">"H0F_en.35" on page 806</a> |
| H0F.36    | 200F-25h              | BiSS-C error bit polarity in fully closed-loop mode                           | 0: Positive<br>1: Negative                                                                 | 0       | -    | At stop      | <a href="#">"H0F_en.36" on page 806</a> |
| H0F.40    | 200F-29h              | Communication error register in full closed-loop mode                         | 0–65535                                                                                    | 0       | -    | Unchangeable | <a href="#">"H0F_en.40" on page 807</a> |
| H0F.41    | 200F-2Ah              | Inovance fully closed-loop encoder version                                    | 0.0–6553.5                                                                                 | 0.0     | -    | Unchangeable | <a href="#">"H0F_en.41" on page 809</a> |
| H0F.42    | 200F-2Bh              | Inovance fully closed-loop encoder resolution                                 | 0–4294967295                                                                               | 0       | -    | Unchangeable | <a href="#">"H0F_en.42" on page 809</a> |
| H0F.45    | 200F-2Eh              | Positioning completed/ Position deviation threshold in fully closed-loop mode | 0: Threshold scaled to outer loop unit<br>1: Same threshold used for inner and outer loops | 0       | -    | At stop      | <a href="#">"H0F_en.45" on page 809</a> |
| H0F.46    | 200F-2Fh              | Fully closed-loop speed feedback selection                                    | 0: Internal encoder feedback<br>1: External encoder feedback                               | 0       | -    | At stop      | <a href="#">"H0F_en.46" on page 810</a> |
| H0F.51    | 200F-34h              | SSI encoder check bit selection in fully closed-loop mode                     | 0: No check<br>1: Check applied                                                            | 1       | -    | At stop      | <a href="#">"H0F_en.51" on page 810</a> |
| H0F.52    | 200F-35h              | SSI encoder code system in full closed-loop mode                              | 0: Binary<br>1: Gray code                                                                  | 1       | -    | At stop      | <a href="#">"H0F_en.52" on page 810</a> |



| Parameter | Communication Address | Name                                                                | Value                     | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|---------------------------------------------------------------------|---------------------------|---------|------|--------------|-----------------------------------------|
| H0F.53    | 200F-36h              | SSI state word code system in fully closed-loop mode                | 0: Binary<br>1: Gray code | 1       | -    | At stop      | <a href="#">"H0F_en.53" on page 811</a> |
| H0F.54    | 200F-37h              | SSI encoder parity check in fully closed-loop mode                  | 0: Disabled<br>1: Enabled | 0       | -    | At stop      | <a href="#">"H0F_en.54" on page 811</a> |
| H0F.55    | 200F-38h              | Fully closed-loop encoder communication timeout error count         | 0-65535                   | 0       | -    | Unchangeable | <a href="#">"H0F_en.55" on page 811</a> |
| H0F.56    | 200F-39h              | Encoder CRC error count in fully closed-loop mode                   | 0-65535                   | 0       | -    | Unchangeable | <a href="#">"H0F_en.56" on page 811</a> |
| H0F.57    | 200F-3Ah              | Fully closed-loop encoder communication frame stop bit error count. | 0-65535                   | 0       | -    | Unchangeable | <a href="#">"H0F_en.57" on page 812</a> |

### 3.17 H11 Multi-Position Parameters

| Parameter | Communication Address | Name                                                     | Value                                                                                                                                                                                                                                         | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H11.00    | 2011-01h              | Multi-position running mode                              | 0: Single run (number of displacements selected in H11.01)<br>1: Cyclic operation (number of displacement selected in H11.01)<br>2: DI-based operation (selected by DI)<br>3: Sequential operation<br>5: Axis-controlled continuous operation | 1       | -    | At stop     | <a href="#">"H11_en.00" on page 812</a> |
| H11.01    | 2011-02h              | Number of displacement references in multi-position mode | 1-16                                                                                                                                                                                                                                          | 1       | -    | At stop     | <a href="#">"H11_en.01" on page 816</a> |

| Parameter | Communication Address | Name                                              | Value                                                                               | Default | Unit           | Change Mode | Page                       |
|-----------|-----------------------|---------------------------------------------------|-------------------------------------------------------------------------------------|---------|----------------|-------------|----------------------------|
| H11.02    | 2011-03h              | Starting displacement No. after pause             | 0: Continue to execute the unexecuted displacements<br>1: Start from displacement 1 | 0       | -              | At stop     | "H11_en.02"<br>on page 816 |
| H11.03    | 2011-04h              | Interval time unit                                | 0: ms<br>1: s                                                                       | 0       | -              | At stop     | "H11_en.03"<br>on page 817 |
| H11.04    | 2011-05h              | Displacement reference type                       | 0: Relative displacement reference<br>1: Absolute displacement reference            | 0       | -              | Real-time   | "H11_en.04"<br>on page 817 |
| H11.05    | 2011-06h              | Starting displacement No. in sequential operation | 0–16                                                                                | 0       | -              | At stop     | "H11_en.05"<br>on page 818 |
| H11.09    | 2011-0Ah              | Deceleration upon axis control OFF                | 0 ms to 65535 ms                                                                    | 65535   | ms             | Real-time   | "H11_en.09"<br>on page 818 |
| H11.10    | 2011-0Bh              | Starting speed of displacement 1                  | 0[mm/s]/[rpm]–6000[mm/s]/[rpm]                                                      | 0       | [mm/s]/[rpm]   | Real-time   | "H11_en.10"<br>on page 818 |
| H11.11    | 2011-0Ch              | Stop speed of displacement 1                      | 0[mm/s]/[rpm]–6000[mm/s]/[rpm]                                                      | 0       | [mm/s]/[rpm]   | Real-time   | "H11_en.11"<br>on page 819 |
| H11.12    | 2011-0Dh              | Displacement 1                                    | -1073741824 to 1073741824                                                           | 10000   | Reference unit | Real-time   | "H11_en.12"<br>on page 819 |
| H11.14    | 2011-0Fh              | Max. speed of displacement 1                      | 1[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                     | 200     | [mm/s]/[rpm]   | Real-time   | "H11_en.14"<br>on page 819 |
| H11.15    | 2011-10h              | Acc/Dec time of displacement 1                    | 0 ms to 65535 ms                                                                    | 10      | ms             | Real-time   | "H11_en.15"<br>on page 820 |
| H11.16    | 2011-11h              | Interval time after displacement 1                | 0 ms(s) to 10000 ms(s)                                                              | 10      | ms (s)         | Real-time   | "H11_en.16"<br>on page 820 |
| H11.17    | 2011-12h              | Displacement 2                                    | -1073741824 to 1073741824                                                           | 10000   | Reference unit | Real-time   | "H11_en.17"<br>on page 821 |
| H11.19    | 2011-14h              | Max. speed of displacement 2                      | 1[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                     | 200     | [mm/s]/[rpm]   | Real-time   | "H11_en.19"<br>on page 821 |
| H11.20    | 2011-15h              | Acc/Dec time of displacement 2                    | 0 ms to 65535 ms                                                                    | 10      | ms             | Real-time   | "H11_en.20"<br>on page 821 |
| H11.21    | 2011-16h              | Interval time after displacement 2                | 0 ms(s) to 10000 ms(s)                                                              | 10      | ms (s)         | Real-time   | "H11_en.21"<br>on page 822 |

| Parameter | Communication Address | Name                               | Value                           | Default | Unit           | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------|---------------------------------|---------|----------------|-------------|-----------------------------------------|
| H11.22    | 2011-17h              | Displacement 3                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.22" on page 822</a> |
| H11.24    | 2011-19h              | Max. speed of displacement 3       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.24" on page 822</a> |
| H11.25    | 2011-1Ah              | Acc/Dec time of displacement 3     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.25" on page 823</a> |
| H11.26    | 2011-1Bh              | Interval time after displacement 3 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.26" on page 823</a> |
| H11.27    | 2011-1Ch              | Displacement 4                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.27" on page 823</a> |
| H11.29    | 2011-1Eh              | Max. speed of displacement 4       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.29" on page 823</a> |
| H11.30    | 2011-1Fh              | Acc/Dec time of displacement 4     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.30" on page 824</a> |
| H11.31    | 2011-20h              | Interval time after displacement 4 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.31" on page 824</a> |
| H11.32    | 2011-21h              | Displacement 5                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.32" on page 824</a> |
| H11.34    | 2011-23h              | Max. speed of displacement 5       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.34" on page 824</a> |
| H11.35    | 2011-24h              | Acc/Dec time of displacement 5     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.35" on page 825</a> |
| H11.36    | 2011-25h              | Interval time after displacement 5 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.36" on page 825</a> |
| H11.37    | 2011-26h              | Displacement 6                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.37" on page 825</a> |
| H11.39    | 2011-28h              | Max. speed of displacement 6       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.39" on page 826</a> |
| H11.40    | 2011-29h              | Acc/Dec time of displacement 6     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.40" on page 826</a> |
| H11.41    | 2011-2Ah              | Interval time after displacement 6 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.41" on page 826</a> |

| Parameter | Communication Address | Name                               | Value                           | Default | Unit           | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------|---------------------------------|---------|----------------|-------------|-----------------------------------------|
| H11.42    | 2011-2Bh              | Displacement 7                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.42" on page 826</a> |
| H11.44    | 2011-2Dh              | Max. speed of displacement 7       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.44" on page 827</a> |
| H11.45    | 2011-2Eh              | Acc/Dec time of displacement 7     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.45" on page 827</a> |
| H11.46    | 2011-2Fh              | Interval time after displacement 7 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.46" on page 827</a> |
| H11.47    | 2011-30h              | Displacement 8                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.47" on page 827</a> |
| H11.49    | 2011-32h              | Max. speed of displacement 8       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.49" on page 828</a> |
| H11.50    | 2011-33h              | Acc/Dec time of displacement 8     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.50" on page 828</a> |
| H11.51    | 2011-34h              | Interval time after displacement 8 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.51" on page 828</a> |
| H11.52    | 2011-35h              | Displacement 9                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.52" on page 829</a> |
| H11.54    | 2011-37h              | Max. speed of displacement 9       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.54" on page 829</a> |
| H11.55    | 2011-38h              | Acc/Dec time of displacement 9     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.55" on page 829</a> |
| H11.56    | 2011-39h              | Interval time after displacement 9 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.56" on page 829</a> |
| H11.57    | 2011-3Ah              | Displacement 10                    | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.57" on page 830</a> |
| H11.59    | 2011-3Ch              | Max. speed of displacement 10      | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.59" on page 830</a> |
| H11.60    | 2011-3Dh              | Acc/Dec time of displacement 10    | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.60" on page 830</a> |

| Parameter | Communication Address | Name                                | Value                           | Default | Unit           | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------|---------------------------------|---------|----------------|-------------|-----------------------------------------|
| H11.61    | 2011-3Eh              | Interval time after displacement 10 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.61" on page 830</a> |
| H11.62    | 2011-3Fh              | Displacement 11                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.62" on page 831</a> |
| H11.64    | 2011-41h              | Max. speed of displacement 11       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.64" on page 831</a> |
| H11.65    | 2011-42h              | Acc/Dec time of displacement 11     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.65" on page 831</a> |
| H11.66    | 2011-43h              | Interval time after displacement 11 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.66" on page 832</a> |
| H11.67    | 2011-44h              | Displacement 12                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.67" on page 832</a> |
| H11.69    | 2011-46h              | Max. speed of displacement 12       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.69" on page 832</a> |
| H11.70    | 2011-47h              | Acc/Dec time of displacement 12     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.70" on page 832</a> |
| H11.71    | 2011-48h              | Interval time after displacement 12 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.71" on page 833</a> |
| H11.72    | 2011-49h              | Displacement 13                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.72" on page 833</a> |
| H11.74    | 2011-4Bh              | Max. speed of displacement 13       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.74" on page 833</a> |
| H11.75    | 2011-4Ch              | Acc/Dec time of displacement 13     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.75" on page 833</a> |
| H11.76    | 2011-4Dh              | Interval time after displacement 13 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.76" on page 834</a> |
| H11.77    | 2011-4Eh              | Displacement 14                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.77" on page 834</a> |

| Parameter | Communication Address | Name                                | Value                           | Default | Unit           | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------|---------------------------------|---------|----------------|-------------|-----------------------------------------|
| H11.79    | 2011-50h              | Max. speed of displacement 14       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.79" on page 834</a> |
| H11.80    | 2011-51h              | Acc/Dec time of displacement 14     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.80" on page 835</a> |
| H11.81    | 2011-52h              | Interval time after displacement 14 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.81" on page 835</a> |
| H11.82    | 2011-53h              | Displacement 15                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.82" on page 835</a> |
| H11.84    | 2011-55h              | Max. speed of displacement 15       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.84" on page 835</a> |
| H11.85    | 2011-56h              | Acc/Dec time of displacement 15     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.85" on page 836</a> |
| H11.86    | 2011-57h              | Interval time after displacement 15 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.86" on page 836</a> |
| H11.87    | 2011-58h              | Displacement 16                     | -1073741824 to 1073741824       | 10000   | Reference unit | Real-time   | <a href="#">"H11_en.87" on page 836</a> |
| H11.89    | 2011-5Ah              | Max. speed of displacement 16       | 1[mm/s]/[rpm]–10000[mm/s]/[rpm] | 200     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H11_en.89" on page 836</a> |
| H11.90    | 2011-5Bh              | Acc/Dec time of displacement 16     | 0 ms to 65535 ms                | 10      | ms             | Real-time   | <a href="#">"H11_en.90" on page 837</a> |
| H11.91    | 2011-5Ch              | Interval time after displacement 16 | 0 ms(s) to 10000 ms(s)          | 10      | ms (s)         | Real-time   | <a href="#">"H11_en.91" on page 837</a> |

### 3.18 H12 Multi-Speed Parameters

| Parameter | Communication Address | Name                                           | Value                                                                                                                                               | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H12.00    | 2012-01h              | Multi-speed operation mode                     | 0: Individual operation (number of speeds selected in H12.01)<br>1: Cyclic operation (number of speeds selected in H12.01)<br>2: DI-based operation | 1       | -            | At stop     | <a href="#">"H12_en.00" on page 837</a> |
| H12.01    | 2012-02h              | Number of speed references in multi-speed mode | 1–16                                                                                                                                                | 16      | -            | At stop     | <a href="#">"H12_en.01" on page 838</a> |
| H12.02    | 2012-03h              | Operating time unit                            | 0: s<br>1: min                                                                                                                                      | 0       | -            | At stop     | <a href="#">"H12_en.02" on page 838</a> |
| H12.03    | 2012-04h              | Acceleration time 1                            | 0 ms to 65535 ms                                                                                                                                    | 10      | ms           | Real-time   | <a href="#">"H12_en.03" on page 839</a> |
| H12.04    | 2012-05h              | Deceleration time 1                            | 0 ms to 65535 ms                                                                                                                                    | 10      | ms           | Real-time   | <a href="#">"H12_en.04" on page 839</a> |
| H12.05    | 2012-06h              | Acceleration time 2                            | 0 ms to 65535 ms                                                                                                                                    | 50      | ms           | Real-time   | <a href="#">"H12_en.05" on page 839</a> |
| H12.06    | 2012-07h              | Deceleration time 2                            | 0 ms to 65535 ms                                                                                                                                    | 50      | ms           | Real-time   | <a href="#">"H12_en.06" on page 840</a> |
| H12.07    | 2012-08h              | Acceleration time 3                            | 0 ms to 65535 ms                                                                                                                                    | 100     | ms           | Real-time   | <a href="#">"H12_en.07" on page 840</a> |
| H12.08    | 2012-09h              | Deceleration time 3                            | 0 ms to 65535 ms                                                                                                                                    | 100     | ms           | Real-time   | <a href="#">"H12_en.08" on page 840</a> |
| H12.09    | 2012-0Ah              | Acceleration time 4                            | 0 ms to 65535 ms                                                                                                                                    | 150     | ms           | Real-time   | <a href="#">"H12_en.09" on page 841</a> |
| H12.10    | 2012-0Bh              | Deceleration time 4                            | 0 ms to 65535 ms                                                                                                                                    | 150     | ms           | Real-time   | <a href="#">"H12_en.10" on page 841</a> |
| H12.20    | 2012-15h              | 1st speed reference                            | -10000[mm/s]/[rpm]–10000[mm/s]/[rpm]                                                                                                                | 0       | [mm/s]/[rpm] | Real-time   | <a href="#">"H12_en.20" on page 841</a> |
| H12.21    | 2012-16h              | Operating time of speed 1                      | 0.0s(m) to 6553.5s(m)                                                                                                                               | 5.0     | s (m)        | Real-time   | <a href="#">"H12_en.21" on page 842</a> |

| Parameter | Communication Address | Name                      | Value                                                                                                                                                                                                              | Default | Unit                 | Change Mode | Page                                        |
|-----------|-----------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------|-------------|---------------------------------------------|
| H12.22    | 2012-17h              | Acc./dec. time of speed 1 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration<br>time 1<br>2: Acceleration/Deceleration<br>time 2<br>3: Acceleration/Deceleration<br>time 3<br>4: Acceleration/Deceleration<br>time 4 | 256     | -                    | Real-time   | <a href="#">"H12_en.22"<br/>on page 842</a> |
| H12.23    | 2012-18h              | Reference 2               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                                           | 100     | [mm/<br>s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.23"<br/>on page 843</a> |
| H12.24    | 2012-19h              | Operating time of speed 2 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                              | 5.0     | s (m)                | Real-time   | <a href="#">"H12_en.24"<br/>on page 843</a> |
| H12.25    | 2012-1Ah              | Acc./dec. time of speed 2 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration<br>time 1<br>2: Acceleration/Deceleration<br>time 2<br>3: Acceleration/Deceleration<br>time 3<br>4: Acceleration/Deceleration<br>time 4 | 256     | -                    | Real-time   | <a href="#">"H12_en.25"<br/>on page 843</a> |
| H12.26    | 2012-1Bh              | Reference 3               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                                           | 300     | [mm/<br>s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.26"<br/>on page 844</a> |
| H12.27    | 2012-1Ch              | Operating time of speed 3 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                              | 5.0     | s (m)                | Real-time   | <a href="#">"H12_en.27"<br/>on page 844</a> |
| H12.28    | 2012-1Dh              | Acc./dec. time of speed 3 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration<br>time 1<br>2: Acceleration/Deceleration<br>time 2<br>3: Acceleration/Deceleration<br>time 3<br>4: Acceleration/Deceleration<br>time 4 | 256     | -                    | Real-time   | <a href="#">"H12_en.28"<br/>on page 844</a> |
| H12.29    | 2012-1Eh              | Reference 4               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                                           | 500     | [mm/<br>s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.29"<br/>on page 845</a> |
| H12.30    | 2012-1Fh              | Operating time of speed 4 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                              | 5.0     | s (m)                | Real-time   | <a href="#">"H12_en.30"<br/>on page 845</a> |



| Parameter | Communication Address | Name                      | Value                                                                                                                                                                                                              | Default | Unit                 | Change Mode | Page                                        |
|-----------|-----------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------|-------------|---------------------------------------------|
| H12.31    | 2012-20h              | Acc./dec. time of speed 4 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration<br>time 1<br>2: Acceleration/Deceleration<br>time 2<br>3: Acceleration/Deceleration<br>time 3<br>4: Acceleration/Deceleration<br>time 4 | 256     | -                    | Real-time   | <a href="#">"H12_en.31"<br/>on page 845</a> |
| H12.32    | 2012-21h              | Reference 5               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                                           | 700     | [mm/<br>s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.32"<br/>on page 846</a> |
| H12.33    | 2012-22h              | Operating time of speed 5 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                              | 5.0     | s (m)                | Real-time   | <a href="#">"H12_en.33"<br/>on page 846</a> |
| H12.34    | 2012-23h              | Acc./dec. time of speed 5 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration<br>time 1<br>2: Acceleration/Deceleration<br>time 2<br>3: Acceleration/Deceleration<br>time 3<br>4: Acceleration/Deceleration<br>time 4 | 256     | -                    | Real-time   | <a href="#">"H12_en.34"<br/>on page 846</a> |
| H12.35    | 2012-24h              | Reference 6               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                                           | 900     | [mm/<br>s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.35"<br/>on page 846</a> |
| H12.36    | 2012-25h              | Operating time of speed 6 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                              | 5.0     | s (m)                | Real-time   | <a href="#">"H12_en.36"<br/>on page 847</a> |
| H12.37    | 2012-26h              | Acc./dec. time of speed 6 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration<br>time 1<br>2: Acceleration/Deceleration<br>time 2<br>3: Acceleration/Deceleration<br>time 3<br>4: Acceleration/Deceleration<br>time 4 | 256     | -                    | Real-time   | <a href="#">"H12_en.37"<br/>on page 847</a> |
| H12.38    | 2012-27h              | Reference 7               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                                           | 600     | [mm/<br>s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.38"<br/>on page 847</a> |
| H12.39    | 2012-28h              | Operating time of speed 7 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                              | 5.0     | s (m)                | Real-time   | <a href="#">"H12_en.39"<br/>on page 848</a> |

| Parameter | Communication Address | Name                       | Value                                                                                                                                                                                                              | Default | Unit                 | Change Mode | Page                                        |
|-----------|-----------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------|-------------|---------------------------------------------|
| H12.40    | 2012-29h              | Acc./dec. time of speed 7  | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration<br>time 1<br>2: Acceleration/Deceleration<br>time 2<br>3: Acceleration/Deceleration<br>time 3<br>4: Acceleration/Deceleration<br>time 4 | 256     | -                    | Real-time   | <a href="#">"H12_en.40"<br/>on page 848</a> |
| H12.41    | 2012-2Ah              | Reference 8                | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                                           | 300     | [mm/<br>s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.41"<br/>on page 848</a> |
| H12.42    | 2012-2Bh              | Operating time of speed 8  | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                              | 5.0     | s (m)                | Real-time   | <a href="#">"H12_en.42"<br/>on page 849</a> |
| H12.43    | 2012-2Ch              | Acc./dec. time of speed 8  | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration<br>time 1<br>2: Acceleration/Deceleration<br>time 2<br>3: Acceleration/Deceleration<br>time 3<br>4: Acceleration/Deceleration<br>time 4 | 256     | -                    | Real-time   | <a href="#">"H12_en.43"<br/>on page 849</a> |
| H12.44    | 2012-2Dh              | Reference 9                | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                                           | 100     | [mm/<br>s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.44"<br/>on page 849</a> |
| H12.45    | 2012-2Eh              | Operating time of speed 9  | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                              | 5.0     | s (m)                | Real-time   | <a href="#">"H12_en.45"<br/>on page 849</a> |
| H12.46    | 2012-2Fh              | Acc./dec. time of speed 9  | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration<br>time 1<br>2: Acceleration/Deceleration<br>time 2<br>3: Acceleration/Deceleration<br>time 3<br>4: Acceleration/Deceleration<br>time 4 | 256     | -                    | Real-time   | <a href="#">"H12_en.46"<br/>on page 850</a> |
| H12.47    | 2012-30h              | Reference 10               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                                           | -100    | [mm/<br>s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.47"<br/>on page 850</a> |
| H12.48    | 2012-31h              | Operating time of speed 10 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                              | 5.0     | s (m)                | Real-time   | <a href="#">"H12_en.48"<br/>on page 850</a> |

| Parameter | Communication Address | Name                       | Value                                                                                                                                                                                                              | Default | Unit                 | Change Mode | Page                                        |
|-----------|-----------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------|-------------|---------------------------------------------|
| H12.49    | 2012-32h              | Acc./dec. time of speed 10 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration<br>time 1<br>2: Acceleration/Deceleration<br>time 2<br>3: Acceleration/Deceleration<br>time 3<br>4: Acceleration/Deceleration<br>time 4 | 256     | -                    | Real-time   | <a href="#">"H12_en.49"<br/>on page 851</a> |
| H12.50    | 2012-33h              | Reference 11               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                                           | -300    | [mm/<br>s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.50"<br/>on page 851</a> |
| H12.51    | 2012-34h              | Operating time of speed 11 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                              | 5.0     | s (m)                | Real-time   | <a href="#">"H12_en.51"<br/>on page 851</a> |
| H12.52    | 2012-35h              | Acc./dec. time of speed 11 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration<br>time 1<br>2: Acceleration/Deceleration<br>time 2<br>3: Acceleration/Deceleration<br>time 3<br>4: Acceleration/Deceleration<br>time 4 | 256     | -                    | Real-time   | <a href="#">"H12_en.52"<br/>on page 852</a> |
| H12.53    | 2012-36h              | Reference 12               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                                           | -500    | [mm/<br>s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.53"<br/>on page 852</a> |
| H12.54    | 2012-37h              | Operating time of speed 12 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                              | 5.0     | s (m)                | Real-time   | <a href="#">"H12_en.54"<br/>on page 852</a> |
| H12.55    | 2012-38h              | Acc./dec. time of speed 12 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration<br>time 1<br>2: Acceleration/Deceleration<br>time 2<br>3: Acceleration/Deceleration<br>time 3<br>4: Acceleration/Deceleration<br>time 4 | 256     | -                    | Real-time   | <a href="#">"H12_en.55"<br/>on page 852</a> |
| H12.56    | 2012-39h              | Reference 13               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                                           | -700    | [mm/<br>s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.56"<br/>on page 853</a> |
| H12.57    | 2012-3Ah              | Operating time of speed 13 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                              | 5.0     | s (m)                | Real-time   | <a href="#">"H12_en.57"<br/>on page 853</a> |

| Parameter | Communication Address | Name                       | Value                                                                                                                                                                                                              | Default | Unit                 | Change Mode | Page                                        |
|-----------|-----------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------|-------------|---------------------------------------------|
| H12.58    | 2012-3Bh              | Acc./dec. time of speed 13 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration<br>time 1<br>2: Acceleration/Deceleration<br>time 2<br>3: Acceleration/Deceleration<br>time 3<br>4: Acceleration/Deceleration<br>time 4 | 256     | -                    | Real-time   | <a href="#">"H12_en.58"<br/>on page 853</a> |
| H12.59    | 2012-3Ch              | Reference 14               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                                           | -900    | [mm/<br>s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.59"<br/>on page 854</a> |
| H12.60    | 2012-3Dh              | Operating time of speed 14 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                              | 5.0     | s (m)                | Real-time   | <a href="#">"H12_en.60"<br/>on page 854</a> |
| H12.61    | 2012-3Eh              | Acc./dec. time of speed 14 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration<br>time 1<br>2: Acceleration/Deceleration<br>time 2<br>3: Acceleration/Deceleration<br>time 3<br>4: Acceleration/Deceleration<br>time 4 | 256     | -                    | Real-time   | <a href="#">"H12_en.61"<br/>on page 854</a> |
| H12.62    | 2012-3Fh              | Reference 15               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                                           | -600    | [mm/<br>s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.62"<br/>on page 855</a> |
| H12.63    | 2012-40h              | Operating time of speed 15 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                              | 5.0     | s (m)                | Real-time   | <a href="#">"H12_en.63"<br/>on page 855</a> |
| H12.64    | 2012-41h              | Acc./dec. time of speed 15 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration<br>time 1<br>2: Acceleration/Deceleration<br>time 2<br>3: Acceleration/Deceleration<br>time 3<br>4: Acceleration/Deceleration<br>time 4 | 256     | -                    | Real-time   | <a href="#">"H12_en.64"<br/>on page 855</a> |
| H12.65    | 2012-42h              | Reference 16               | -10000[mm/s]/<br>[rpm]–10000[mm/s]/[rpm]                                                                                                                                                                           | -300    | [mm/<br>s]/<br>[rpm] | Real-time   | <a href="#">"H12_en.65"<br/>on page 856</a> |

| Parameter | Communication Address | Name                       | Value                                                                                                                                                                                                  | Default | Unit  | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-------|-------------|-----------------------------------------|
| H12.66    | 2012-43h              | Operating time of speed 16 | 0.0s(m) to 6553.5s(m)                                                                                                                                                                                  | 5.0     | s (m) | Real-time   | <a href="#">"H12_en.66" on page 856</a> |
| H12.67    | 2012-44h              | Acc./dec. time of speed 16 | 0: Zero acceleration/<br>deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4 | 256     | -     | Real-time   | <a href="#">"H12_en.67" on page 856</a> |

### 3.19 H14 Gantry Synchronization Parameters

| Parameter | Communication Address | Name                                 | Value                                                                                                                                                                                              | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|--------------|-----------------------------------------|
| H14.00    | 2014-01h              | Gantry communication state           | 0–1                                                                                                                                                                                                | 0       | -    | Unchangeable | <a href="#">"H14_en.00" on page 857</a> |
| H14.01    | 2014-02h              | Gantry alignment state               | 0–1                                                                                                                                                                                                | 0       | -    | Unchangeable | <a href="#">"H14_en.01" on page 857</a> |
| H14.02    | 2014-03h              | Gantry function selection            | 0: None<br>1: Gantry synchronization                                                                                                                                                               | 0       | -    | At stop      | <a href="#">"H14_en.02" on page 857</a> |
| H14.03    | 2014-04h              | Gantry axis attribute (master-slave) | 0: Slave axis<br>1: Master axis                                                                                                                                                                    | 0       | -    | At stop      | <a href="#">"H14_en.03" on page 858</a> |
| H14.04    | 2014-05h              | Gantry mechanical attribute          | 0: Rigid gantry scheme 1-Two-axis position control<br>1: Flexible gantry scheme 1-Two-axis position control<br>2: Rigid gantry scheme 2-Master axis position control and slave axis torque control | 0       | -    | At stop      | <a href="#">"H14_en.04" on page 858</a> |
| H14.05    | 2014-06h              | Current axis position sync direction | 0: Forward<br>1: Reverse                                                                                                                                                                           | 0       | -    | At stop      | <a href="#">"H14_en.05" on page 858</a> |
| H14.07    | 2014-08h              | Gantry sync enable                   | 0: Disabled<br>1: Enabled<br>2: DI-enabled                                                                                                                                                         | 0       | -    | Real-time    | <a href="#">"H14_en.07" on page 859</a> |

| Parameter | Communication Address | Name                                                             | Value                                                                                                            | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H14.08    | 2014-09h              | Gantry sync position loop proportional gain                      | 0.0% to 300.0%                                                                                                   | 0.0     | %    | Real-time   | <a href="#">"H14_en.08" on page 859</a> |
| H14.09    | 2014-0Ah              | Gantry sync position loop integral time constant                 | 0.5 ms–1000.0 ms                                                                                                 | 1000.0  | ms   | Real-time   | <a href="#">"H14_en.09" on page 859</a> |
| H14.10    | 2014-0Bh              | Gantry sync speed loop proportional gain                         | 0.0% to 300.0%                                                                                                   | 0.0     | %    | Real-time   | <a href="#">"H14_en.10" on page 860</a> |
| H14.11    | 2014-0Ch              | Gantry sync speed loop integral time constant                    | 0.5 ms–1000.0 ms                                                                                                 | 1000.0  | ms   | Real-time   | <a href="#">"H14_en.11" on page 860</a> |
| H14.12    | 2014-0Dh              | Gantry sync speed limit                                          | 0.0rpm to 6000.0rpm                                                                                              | 50.0    | RPM  | Real-time   | <a href="#">"H14_en.12" on page 860</a> |
| H14.13    | 2014-0Eh              | Gantry alignment speed                                           | 0.0rpm to 3000.0rpm                                                                                              | 10.0    | RPM  | Real-time   | <a href="#">"H14_en.13" on page 860</a> |
| H14.14    | 2014-0Fh              | Gantry alignment acc./dec. time                                  | 0 ms–1000 ms                                                                                                     | 100     | ms   | Real-time   | <a href="#">"H14_en.14" on page 861</a> |
| H14.18    | 2014-13h              | Torque pre-alignment before gantry homing                        | 0: Disabled<br>1: Enabled                                                                                        | 0       | -    | At stop     | <a href="#">"H14_en.18" on page 861</a> |
| H14.20    | 2014-15h              | Gantry aligned by default upon power-on                          | 0: None<br>1: Align at first power-on                                                                            | 1       | -    | At stop     | <a href="#">"H14_en.20" on page 861</a> |
| H14.21    | 2014-16h              | Gantry alignment mode                                            | 0: Gantry homing alignment<br>2: Gantry torque alignment<br>3: Gantry enable alignment<br>4: Gantry DI alignment | 0       | -    | At stop     | <a href="#">"H14_en.21" on page 862</a> |
| H14.25    | 2014-1Ah              | Flexible gantry homing - Master/slave home deviation auto-tuning | 0: Disabled<br>1: Torque alignment auto-tuning<br>2: Position auto-tuning                                        | 0       | -    | Real-time   | <a href="#">"H14_en.25" on page 862</a> |
| H14.26    | 2014-1Bh              | Gantry torque alignment enable                                   | 0: Disabled<br>1: Enabled<br>2: DI-enabled<br>3: Enabled at power-on                                             | 0       | -    | Real-time   | <a href="#">"H14_en.26" on page 863</a> |

| Parameter | Communication Address | Name                                                                           | Value                       | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|--------------------------------------------------------------------------------|-----------------------------|---------|------|--------------|-----------------------------------------|
| H14.27    | 2014-1Ch              | Gantry torque alignment torque                                                 | 0.0% to 300.0%              | 10.0    | %    | Real-time    | <a href="#">"H14_en.27" on page 863</a> |
| H14.28    | 2014-1Dh              | Gantry torque alignment count                                                  | 1–2                         | 2       | -    | Real-time    | <a href="#">"H14_en.28" on page 863</a> |
| H14.29    | 2014-1Eh              | Gantry torque alignment speed                                                  | 0.0rpm to 3000.0rpm         | 10.0    | RPM  | Real-time    | <a href="#">"H14_en.29" on page 864</a> |
| H14.30    | 2014-1Fh              | Gantry torque alignment timeout alarm time                                     | 1s to 65535s                | 100     | s    | Real-time    | <a href="#">"H14_en.30" on page 864</a> |
| H14.31    | 2014-20h              | Gantry torque alignment acc./dec. time                                         | 0 ms–1000 ms                | 100     | ms   | Real-time    | <a href="#">"H14_en.31" on page 864</a> |
| H14.32    | 2014-21h              | Gantry torque alignment zero speed threshold                                   | 0.0rpm to 100.0rpm          | 2.0     | RPM  | Real-time    | <a href="#">"H14_en.32" on page 864</a> |
| H14.33    | 2014-22h              | Gantry torque alignment mechanical limit evaluation position loop period count | 0–65535                     | 5       | -    | Real-time    | <a href="#">"H14_en.33" on page 865</a> |
| H14.35    | 2014-24h              | 2-axis position deviation (encoder unit)                                       | -2147483648p to 2147483647p | 0       | p    | Unchangeable | <a href="#">"H14_en.35" on page 865</a> |
| H14.37    | 2014-26h              | 2-axis speed deviation                                                         | -32767rpm to 32767rpm       | 0       | RPM  | Unchangeable | <a href="#">"H14_en.37" on page 865</a> |
| H14.38    | 2014-27h              | Torque reference of active axis                                                | -3276.7% to 3276.7%         | 0.0     | %    | Unchangeable | <a href="#">"H14_en.38" on page 866</a> |
| H14.39    | 2014-28h              | Torque reference of paired axis                                                | -3276.7% to 3276.7%         | 0.0     | %    | Unchangeable | <a href="#">"H14_en.39" on page 866</a> |
| H14.40    | 2014-29h              | Motor speed of active axis                                                     | -32767rpm to 32767rpm       | 0       | RPM  | Unchangeable | <a href="#">"H14_en.40" on page 866</a> |
| H14.41    | 2014-2Ah              | Motor speed of paired axis                                                     | -32767rpm to 32767rpm       | 0       | RPM  | Unchangeable | <a href="#">"H14_en.41" on page 866</a> |

| Parameter | Communication Address | Name                                                                               | Value                         | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|------------------------------------------------------------------------------------|-------------------------------|---------|------|--------------|-----------------------------------------|
| H14.44    | 2014-2Dh              | Alarm time threshold of large gantry deviation                                     | 0.5 ms–1000.0 ms              | 3.0     | ms   | Real-time    | <a href="#">"H14_en.44" on page 867</a> |
| H14.45    | 2014-2Eh              | Gantry position alarm threshold                                                    | -2147483648p to 2147483647p   | 50000   | p    | At stop      | <a href="#">"H14_en.45" on page 867</a> |
| H14.47    | 2014-30h              | Large gantry position deviation alarm enable                                       | 0: Disabled<br>1: Enabled     | 1       | -    | Real-time    | <a href="#">"H14_en.47" on page 867</a> |
| H14.48    | 2014-31h              | Alarm time threshold of large gantry torque deviation                              | 0.5 ms–1000.0 ms              | 3.0     | ms   | Real-time    | <a href="#">"H14_en.48" on page 868</a> |
| H14.49    | 2014-32h              | Gantry torque deviation alarm threshold                                            | 0.0% to 800.0%                | 300.0   | %    | At stop      | <a href="#">"H14_en.49" on page 868</a> |
| H14.50    | 2014-33h              | Large gantry torque deviation alarm enable                                         | 0: Disabled<br>1: Enabled     | 0       | -    | Real-time    | <a href="#">"H14_en.50" on page 868</a> |
| H14.52    | 2014-35h              | Gantry mismatch                                                                    | 0–1451                        | 0       | -    | Unchangeable | <a href="#">"H14_en.52" on page 868</a> |
| H14.71    | 2014-48h              | Flexible gantry homing - Enable aligning slave axis homing position to home offset | 0: No operation<br>1: Enabled | 0       | -    | Real-time    | <a href="#">"H14_en.71" on page 869</a> |
| H14.74    | 2014-4Bh              | Gantry scheme 2 slave axis enable                                                  | 0: No operation<br>1: Enabled | 0       | -    | At stop      | <a href="#">"H14_en.74" on page 869</a> |



## 3.20 H17 Virtual DI/DO Parameters

| Parameter | Communication Address | Name                             | Value                                                                                         | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------|-----------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H17.90    | 2017-5Bh              | Communication VDI enable         | 0: Disabled<br>1: Enabled                                                                     | 0       | -    | At stop     | <a href="#">"H17_en.90" on page 869</a> |
| H17.91    | 2017-5Ch              | VDI default value after power-on | See <a href="#">"H17_en.91" on page 870</a> for details.                                      | 0       | -    | Real-time   | <a href="#">"H17_en.91" on page 870</a> |
| H17.00    | 2017-01h              | VDI1 function                    | See <a href="#">"H17_en.00" on page 871</a> for details.                                      | 0       | -    | Real-time   | <a href="#">"H17_en.00" on page 871</a> |
| H17.01    | 2017-02h              | VDI1 logic level selection       | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.01" on page 872</a> |
| H17.02    | 2017-03h              | VDI2 function                    | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.02" on page 872</a> |
| H17.03    | 2017-04h              | VDI2 logic level selection       | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.03" on page 872</a> |
| H17.04    | 2017-05h              | VDI3 function                    | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.04" on page 872</a> |
| H17.05    | 2017-06h              | VDI3 logic level selection       | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.05" on page 873</a> |
| H17.06    | 2017-07h              | VDI4 function                    | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.06" on page 873</a> |
| H17.07    | 2017-08h              | VDI4 logic level selection       | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.07" on page 873</a> |
| H17.08    | 2017-09h              | VDI5 function                    | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.08" on page 873</a> |
| H17.09    | 2017-0Ah              | VDI5 logic level selection       | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.09" on page 874</a> |
| H17.10    | 2017-0Bh              | VDI6 function                    | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.10" on page 874</a> |
| H17.11    | 2017-0Ch              | VDI6 logic level selection       | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.11" on page 874</a> |

| Parameter | Communication Address | Name                        | Value                                                                                         | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------|-----------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H17.12    | 2017-0Dh              | VDI7 function               | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.12" on page 875</a> |
| H17.13    | 2017-0Eh              | VDI7 logic level selection  | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.13" on page 875</a> |
| H17.14    | 2017-0Fh              | VDI8 function               | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.14" on page 875</a> |
| H17.15    | 2017-10h              | VDI8 logic level selection  | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.15" on page 875</a> |
| H17.16    | 2017-11h              | VDI9 function               | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.16" on page 876</a> |
| H17.17    | 2017-12h              | VDI9 logic level selection  | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.17" on page 876</a> |
| H17.18    | 2017-13h              | VDI10 function              | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.18" on page 876</a> |
| H17.19    | 2017-14h              | VDI10 logic level selection | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.19" on page 876</a> |
| H17.20    | 2017-15h              | VDI11 function              | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.20" on page 877</a> |
| H17.21    | 2017-16h              | VDI11 logic level selection | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.21" on page 877</a> |
| H17.22    | 2017-17h              | VDI12 function              | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.22" on page 877</a> |
| H17.23    | 2017-18h              | VDI12 logic level selection | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.23" on page 878</a> |
| H17.24    | 2017-19h              | VDI13 function              | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.24" on page 878</a> |
| H17.25    | 2017-1Ah              | VDI13 logic level selection | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1 | 0       | -    | Real-time   | <a href="#">"H17_en.25" on page 878</a> |
| H17.26    | 2017-1Bh              | VDI14 function              | See H17.00.                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.26" on page 878</a> |

| Parameter | Communication Address | Name                             | Value                                                                                                                                                                                                                                     | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|--------------|-----------------------------------------|
| H17.27    | 2017-1Ch              | VDI14 logic level selection      | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1                                                                                                                                             | 0       | -    | Real-time    | <a href="#">"H17_en.27" on page 879</a> |
| H17.28    | 2017-1Dh              | VDI15 function                   | See H17.00.                                                                                                                                                                                                                               | 0       | -    | Real-time    | <a href="#">"H17_en.28" on page 879</a> |
| H17.29    | 2017-1Eh              | VDI15 logic level selection      | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1                                                                                                                                             | 0       | -    | Real-time    | <a href="#">"H17_en.29" on page 879</a> |
| H17.30    | 2017-1Fh              | VDI16 function                   | See H17.00.                                                                                                                                                                                                                               | 0       | -    | Real-time    | <a href="#">"H17_en.30" on page 879</a> |
| H17.31    | 2017-20h              | VDI16 logic level selection      | 0: Active when the written value is 1<br>1: Active when the written value changes from 0 to 1                                                                                                                                             | 0       | -    | Real-time    | <a href="#">"H17_en.31" on page 880</a> |
| H17.92    | 2017-5Dh              | Communication VDO enable         | 0: Disabled<br>1: Enabled                                                                                                                                                                                                                 | 0       | -    | At stop      | <a href="#">"H17_en.92" on page 880</a> |
| H17.93    | 2017-5Eh              | VDO default value after power-on | bit0: VDO1<br>bit1: VDO2<br>bit2: VDO3<br>bit3: VDO4<br>bit4: VDO5<br>bit5: VDO6<br>bit6: VDO7<br>bit7: VDO8<br>bit8: VDO9<br>bit9: VDO10<br>bit10: VDO11<br>bit11: VDO12<br>bit12: VDO13<br>bit13: VDO14<br>bit14: VDO15<br>bit15: VDO16 | 0       | -    | At stop      | <a href="#">"H17_en.93" on page 880</a> |
| H17.32    | 2017-21h              | VDO virtual level                | 0–65535                                                                                                                                                                                                                                   | 0       | -    | Unchangeable | <a href="#">"H17_en.32" on page 881</a> |

| Parameter | Communication Address | Name                       | Value                                                                                                                                                                                                                                         | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H17.33    | 2017-22h              | VDO1 function              | 0: Undefined<br>1: Servo ready<br>2: Motor rotation signal<br>9: Braking<br>10: Warning<br>11: Failure<br>26: Closed-loop state<br>27: Left limit<br>28: Right limit<br>31: Forced communication DO<br>32: EDM output<br>33: Gantry alignment | 0       | -    | Real-time   | <a href="#">"H17_en.33" on page 881</a> |
| H17.34    | 2017-23h              | VDO1 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic                                                                                                                                                                                | 0       | -    | Real-time   | <a href="#">"H17_en.34" on page 882</a> |
| H17.35    | 2017-24h              | VDO2 function              | See H17.33.                                                                                                                                                                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.35" on page 882</a> |
| H17.36    | 2017-25h              | VDO2 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic                                                                                                                                                                                | 0       | -    | Real-time   | <a href="#">"H17_en.36" on page 882</a> |
| H17.37    | 2017-26h              | VDO3 function              | See H17.33.                                                                                                                                                                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.37" on page 883</a> |
| H17.38    | 2017-27h              | VDO3 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic                                                                                                                                                                                | 0       | -    | Real-time   | <a href="#">"H17_en.38" on page 883</a> |
| H17.39    | 2017-28h              | VDO4 function              | See H17.33.                                                                                                                                                                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.39" on page 883</a> |
| H17.40    | 2017-29h              | VDO4 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic                                                                                                                                                                                | 0       | -    | Real-time   | <a href="#">"H17_en.40" on page 884</a> |
| H17.41    | 2017-2Ah              | VDO5 function              | See H17.33.                                                                                                                                                                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.41" on page 884</a> |
| H17.42    | 2017-2Bh              | VDO5 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic                                                                                                                                                                                | 0       | -    | Real-time   | <a href="#">"H17_en.42" on page 884</a> |
| H17.43    | 2017-2Ch              | VDO6 function              | See H17.33.                                                                                                                                                                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.43" on page 884</a> |
| H17.44    | 2017-2Dh              | VDO6 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic                                                                                                                                                                                | 0       | -    | Real-time   | <a href="#">"H17_en.44" on page 885</a> |
| H17.45    | 2017-2Eh              | VDO7 function              | See H17.33.                                                                                                                                                                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.45" on page 885</a> |
| H17.46    | 2017-2Fh              | VDO7 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic                                                                                                                                                                                | 0       | -    | Real-time   | <a href="#">"H17_en.46" on page 885</a> |
| H17.47    | 2017-30h              | VDO8 function              | See H17.33.                                                                                                                                                                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.47" on page 885</a> |
| H17.48    | 2017-31h              | VDO8 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic                                                                                                                                                                                | 0       | -    | Real-time   | <a href="#">"H17_en.48" on page 886</a> |
| H17.49    | 2017-32h              | VDO9 function              | See H17.33.                                                                                                                                                                                                                                   | 0       | -    | Real-time   | <a href="#">"H17_en.49" on page 886</a> |

| Parameter | Communication Address | Name                        | Value                                                          | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------|----------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H17.50    | 2017-33h              | VDO9 logic level selection  | 0: Output 1 upon active logic<br>1: Output 0 upon active logic | 0       | -    | Real-time   | <a href="#">"H17_en.50" on page 886</a> |
| H17.51    | 2017-34h              | VDO10 function              | See H17.33.                                                    | 0       | -    | Real-time   | <a href="#">"H17_en.51" on page 887</a> |
| H17.52    | 2017-35h              | VDO10 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic | 0       | -    | Real-time   | <a href="#">"H17_en.52" on page 887</a> |
| H17.53    | 2017-36h              | VDO11 function              | See H17.33.                                                    | 0       | -    | Real-time   | <a href="#">"H17_en.53" on page 887</a> |
| H17.54    | 2017-37h              | VDO11 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic | 0       | -    | Real-time   | <a href="#">"H17_en.54" on page 887</a> |
| H17.55    | 2017-38h              | VDO12 function              | See H17.33.                                                    | 0       | -    | Real-time   | <a href="#">"H17_en.55" on page 888</a> |
| H17.56    | 2017-39h              | VDO12 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic | 0       | -    | Real-time   | <a href="#">"H17_en.56" on page 888</a> |
| H17.57    | 2017-3Ah              | VDO13 function              | See H17.33.                                                    | 0       | -    | Real-time   | <a href="#">"H17_en.57" on page 888</a> |
| H17.58    | 2017-3Bh              | VDO13 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic | 0       | -    | Real-time   | <a href="#">"H17_en.58" on page 888</a> |
| H17.59    | 2017-3Ch              | VDO14 function              | See H17.33.                                                    | 0       | -    | Real-time   | <a href="#">"H17_en.59" on page 889</a> |
| H17.60    | 2017-3Dh              | VDO14 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic | 0       | -    | Real-time   | <a href="#">"H17_en.60" on page 889</a> |
| H17.61    | 2017-3Eh              | VDO15 function              | See H17.33.                                                    | 0       | -    | Real-time   | <a href="#">"H17_en.61" on page 889</a> |
| H17.62    | 2017-3Fh              | VDO15 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic | 0       | -    | Real-time   | <a href="#">"H17_en.62" on page 890</a> |
| H17.63    | 2017-40h              | VDO16 function              | See H17.33.                                                    | 0       | -    | Real-time   | <a href="#">"H17_en.63" on page 890</a> |
| H17.64    | 2017-41h              | VDO16 logic level selection | 0: Output 1 upon active logic<br>1: Output 0 upon active logic | 0       | -    | Real-time   | <a href="#">"H17_en.64" on page 890</a> |

### 3.21 H18 Position Comparison Output Parameters

| Parameter | Communication Address | Name                                         | Value                                                                                                                                                                                                                                                                                                                                                                                                | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H18.00    | 2018-01h              | Position comparison output selection         | 0: Disable<br>1: Enable (rising edge-triggered)                                                                                                                                                                                                                                                                                                                                                      | 0       | -    | Real-time   | <a href="#">"H18_en.00" on page 890</a> |
| H18.01    | 2018-02h              | Position comparison output feedback source   | 0: Motor encoder feedback<br>1: Fully closed-loop position feedback                                                                                                                                                                                                                                                                                                                                  | 0       | -    | Real-time   | <a href="#">"H18_en.01" on page 891</a> |
| H18.02    | 2018-03h              | Position comparison resolution               | 0: 24-bit<br>1: 23-bit<br>2: 22-bit<br>3: 21-bit<br>4: 20-bit<br>5: 19-bit<br>6: 18-bit<br>7: 17-bit                                                                                                                                                                                                                                                                                                 | 1       | -    | Real-time   | <a href="#">"H18_en.02" on page 891</a> |
| H18.03    | 2018-04h              | Position comparison mode                     | 0: Individual comparison mode<br>1: Cyclic comparison mode<br>2: Fixed cyclic comparison mode                                                                                                                                                                                                                                                                                                        | 0       | -    | Real-time   | <a href="#">"H18_en.03" on page 891</a> |
| H18.04    | 2018-05h              | Current position as zero                     | 0: Disable<br>1: Enable (rising edge-triggered)                                                                                                                                                                                                                                                                                                                                                      | 0       | -    | Real-time   | <a href="#">"H18_en.04" on page 892</a> |
| H18.05    | 2018-06h              | Position comparison output width             | 0.1 ms–204.7 ms                                                                                                                                                                                                                                                                                                                                                                                      | 0.1     | ms   | Real-time   | <a href="#">"H18_en.05" on page 892</a> |
| H18.06    | 2018-07h              | Position comparison output ABZ port polarity | Bit 0: OCZ output logic<br>0: Positive, output high level upon active logic<br>1: Negative, output low level upon active logic<br>Bit 1: Z port output logic<br>0: Positive, output high level upon active logic<br>1: Negative, output low level upon active logic<br>bit2: A/B output logic<br>0: Positive, output high level upon active logic<br>1: Negative, output low level upon active logic | 0       | -    | Real-time   | <a href="#">"H18_en.06" on page 892</a> |

| Parameter | Communication Address | Name                                          | Value                                                                                                                                                                                                                                                                     | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|--------------|-----------------------------------------|
| H18.07    | 2018-08h              | Position comparison start point               | 0–40                                                                                                                                                                                                                                                                      | 0       | -    | Real-time    | <a href="#">"H18_en.07" on page 893</a> |
| H18.08    | 2018-09h              | Position comparison end point                 | 0–40                                                                                                                                                                                                                                                                      | 0       | -    | Real-time    | <a href="#">"H18_en.08" on page 893</a> |
| H18.09    | 2018-0Ah              | Current state of position comparison          | 0–1024                                                                                                                                                                                                                                                                    | 0       | -    | Unchangeable | <a href="#">"H18_en.09" on page 894</a> |
| H18.10    | 2018-0Bh              | Real-time position of position comparison     | -2147483648–2147483647                                                                                                                                                                                                                                                    | 0       | -    | Unchangeable | <a href="#">"H18_en.10" on page 894</a> |
| H18.12    | 2018-0Dh              | Zero offset of position comparison            | -2147483648–2147483647                                                                                                                                                                                                                                                    | 0       | -    | Real-time    | <a href="#">"H18_en.12" on page 894</a> |
| H18.14    | 2018-0Fh              | Position comparison output delay compensation | -12.00 $\mu$ s to +12.00 $\mu$ s                                                                                                                                                                                                                                          | 0.00    | us   | Real-time    | <a href="#">"H18_en.14" on page 894</a> |
| H18.15    | 2018-10h              | Fixed cyclic comparison                       | 1–65535                                                                                                                                                                                                                                                                   | 1       | -    | Real-time    | <a href="#">"H18_en.15" on page 895</a> |
| H18.16    | 2018-11h              | ABZ output function setting                   | bit0: OCZ output function<br>0: Frequency-division output<br>1: Position comparison<br>bit1: Z port output function<br>0: Frequency-division output<br>1: Position comparison<br>bit2: A/B port output function<br>0: Frequency-division output<br>1: Position comparison | 0       | -    | Real-time    | <a href="#">"H18_en.16" on page 895</a> |
| H18.17    | 2018-12h              | Number of fixed mode cycles                   | 0–65535                                                                                                                                                                                                                                                                   | 0       | -    | Unchangeable | <a href="#">"H18_en.17" on page 896</a> |

### 3.22 H19 Target Position Parameters

| Parameter | Communication Address | Name                                     | Value                                                    | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------------|----------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H19.00    | 2019-01h              | Target value of position comparison 1    | -2147483648–2147483647                                   | 0       | -    | Real-time   | <a href="#">"H19_en.00" on page 896</a> |
| H19.02    | 2019-03h              | Attribute value of position comparison 1 | See <a href="#">"H19_en.02" on page 896</a> for details. | 0       | -    | Real-time   | <a href="#">"H19_en.02" on page 896</a> |
| H19.03    | 2019-04h              | Target value of position comparison 2    | -2147483648–2147483647                                   | 0       | -    | Real-time   | <a href="#">"H19_en.03" on page 897</a> |
| H19.05    | 2019-06h              | Attribute value of position comparison 2 | See H19.02.                                              | 0       | -    | Real-time   | <a href="#">"H19_en.05" on page 897</a> |
| H19.06    | 2019-07h              | Target value of position comparison 3    | -2147483648–2147483647                                   | 0       | -    | Real-time   | <a href="#">"H19_en.06" on page 898</a> |
| H19.08    | 2019-09h              | Attribute value of position comparison 3 | See H19.02.                                              | 0       | -    | Real-time   | <a href="#">"H19_en.08" on page 898</a> |
| H19.09    | 2019-0Ah              | Target value of position comparison 4    | -2147483648–2147483647                                   | 0       | -    | Real-time   | <a href="#">"H19_en.09" on page 898</a> |
| H19.11    | 2019-0Ch              | Attribute value of position comparison 4 | See H19.02.                                              | 0       | -    | Real-time   | <a href="#">"H19_en.11" on page 898</a> |
| H19.12    | 2019-0Dh              | Target value of position comparison 5    | -2147483648–2147483647                                   | 0       | -    | Real-time   | <a href="#">"H19_en.12" on page 899</a> |
| H19.14    | 2019-0Fh              | Attribute value of position comparison 5 | See H19.02.                                              | 0       | -    | Real-time   | <a href="#">"H19_en.14" on page 899</a> |
| H19.15    | 2019-10h              | Target value of position comparison 6    | -2147483648–2147483647                                   | 0       | -    | Real-time   | <a href="#">"H19_en.15" on page 899</a> |
| H19.17    | 2019-12h              | Attribute value of position comparison 6 | See H19.02.                                              | 0       | -    | Real-time   | <a href="#">"H19_en.17" on page 899</a> |
| H19.18    | 2019-13h              | Target value of position comparison 7    | -2147483648–2147483647                                   | 0       | -    | Real-time   | <a href="#">"H19_en.18" on page 900</a> |
| H19.20    | 2019-15h              | Attribute value of position comparison 7 | See H19.02.                                              | 0       | -    | Real-time   | <a href="#">"H19_en.20" on page 900</a> |



| Parameter | Communication Address | Name                                      | Value                  | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------|------------------------|---------|------|-------------|-----------------------------------------|
| H19.21    | 2019-16h              | Target value of position comparison 8     | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.21" on page 900</a> |
| H19.23    | 2019-18h              | Attribute value of position comparison 8  | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.23" on page 900</a> |
| H19.24    | 2019-19h              | Target value of position comparison 9     | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.24" on page 901</a> |
| H19.26    | 2019-1Bh              | Attribute value of position comparison 9  | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.26" on page 901</a> |
| H19.27    | 2019-1Ch              | Target value of position comparison 10    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.27" on page 901</a> |
| H19.29    | 2019-1Eh              | Attribute value of position comparison 10 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.29" on page 902</a> |
| H19.30    | 2019-1Fh              | Target value of position comparison 11    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.30" on page 902</a> |
| H19.32    | 2019-21h              | Attribute value of position comparison 11 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.32" on page 902</a> |
| H19.33    | 2019-22h              | Target value of position comparison 12    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.33" on page 902</a> |
| H19.35    | 2019-24h              | Attribute value of position comparison 12 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.35" on page 903</a> |
| H19.36    | 2019-25h              | Target value of position comparison 13    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.36" on page 903</a> |
| H19.38    | 2019-27h              | Attribute value of position comparison 13 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.38" on page 903</a> |
| H19.39    | 2019-28h              | Target value of position comparison 14    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.39" on page 903</a> |
| H19.41    | 2019-2Ah              | Attribute value of position comparison 14 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.41" on page 904</a> |

| Parameter | Communication Address | Name                                      | Value                  | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------|------------------------|---------|------|-------------|-----------------------------------------|
| H19.42    | 2019-2Bh              | Target value of position comparison 15    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.42" on page 904</a> |
| H19.44    | 2019-2Dh              | Attribute value of position comparison 15 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.44" on page 904</a> |
| H19.45    | 2019-2Eh              | Target value of position comparison 16    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.45" on page 904</a> |
| H19.47    | 2019-30h              | Attribute value of position comparison 16 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.47" on page 905</a> |
| H19.48    | 2019-31h              | Target value of position comparison 17    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.48" on page 905</a> |
| H19.50    | 2019-33h              | Attribute value of position comparison 17 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.50" on page 905</a> |
| H19.51    | 2019-34h              | Target value of position comparison 18    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.51" on page 906</a> |
| H19.53    | 2019-36h              | Attribute value of position comparison 18 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.53" on page 906</a> |
| H19.54    | 2019-37h              | Target value of position comparison 19    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.54" on page 906</a> |
| H19.56    | 2019-39h              | Attribute value of position comparison 19 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.56" on page 906</a> |
| H19.57    | 2019-3Ah              | Target value of position comparison 20    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.57" on page 907</a> |
| H19.59    | 2019-3Ch              | Attribute value of position comparison 20 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.59" on page 907</a> |
| H19.60    | 2019-3Dh              | Target value of position comparison 21    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.60" on page 907</a> |
| H19.62    | 2019-3Fh              | Attribute value of position comparison 21 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.62" on page 907</a> |

| Parameter | Communication Address | Name                                      | Value                  | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------|------------------------|---------|------|-------------|-----------------------------------------|
| H19.63    | 2019-40h              | Target value of position comparison 22    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.63" on page 908</a> |
| H19.65    | 2019-42h              | Attribute value of position comparison 22 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.65" on page 908</a> |
| H19.66    | 2019-43h              | Target value of position comparison 23    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.66" on page 908</a> |
| H19.68    | 2019-45h              | Attribute value of position comparison 23 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.68" on page 908</a> |
| H19.69    | 2019-46h              | Target value of position comparison 24    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.69" on page 909</a> |
| H19.71    | 2019-48h              | Attribute value of position comparison 24 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.71" on page 909</a> |
| H19.72    | 2019-49h              | Target value of position comparison 25    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.72" on page 909</a> |
| H19.74    | 2019-4Bh              | Attribute value of position comparison 25 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.74" on page 910</a> |
| H19.75    | 2019-4Ch              | Target value of position comparison 26    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.75" on page 910</a> |
| H19.77    | 2019-4Eh              | Attribute value of position comparison 26 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.77" on page 910</a> |
| H19.78    | 2019-4Fh              | Target value of position comparison 27    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.78" on page 910</a> |
| H19.80    | 2019-51h              | Attribute value of position comparison 27 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.80" on page 911</a> |
| H19.81    | 2019-52h              | Target value of position comparison 28    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.81" on page 911</a> |
| H19.83    | 2019-54h              | Attribute value of position comparison 28 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.83" on page 911</a> |

| Parameter | Communication Address | Name                                      | Value                  | Default | Unit | Change Mode | Page                                     |
|-----------|-----------------------|-------------------------------------------|------------------------|---------|------|-------------|------------------------------------------|
| H19.84    | 2019-55h              | Target value of position comparison 29    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.84" on page 911</a>  |
| H19.86    | 2019-57h              | Attribute value of position comparison 29 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.86" on page 912</a>  |
| H19.87    | 2019-58h              | Target value of position comparison 30    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.87" on page 912</a>  |
| H19.89    | 2019-5Ah              | Attribute value of position comparison 30 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.89" on page 912</a>  |
| H19.90    | 2019-5Bh              | Target value of position comparison 31    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.90" on page 912</a>  |
| H19.92    | 2019-5Dh              | Attribute value of position comparison 31 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.92" on page 913</a>  |
| H19.93    | 2019-5Eh              | Target value of position comparison 32    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.93" on page 913</a>  |
| H19.95    | 2019-60h              | Attribute value of position comparison 32 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.95" on page 913</a>  |
| H19.96    | 2019-61h              | Target value of position comparison 33    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.96" on page 914</a>  |
| H19.98    | 2019-63h              | Attribute value of position comparison 33 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.98" on page 914</a>  |
| H19.99    | 2019-64h              | Target value of position comparison 34    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.99" on page 914</a>  |
| H19.101   | 2019-66h              | Attribute value of position comparison 34 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.101" on page 914</a> |
| H19.102   | 2019-67h              | Target value of position comparison 35    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.102" on page 915</a> |
| H19.104   | 2019-69h              | Attribute value of position comparison 35 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.104" on page 915</a> |

| Parameter | Communication Address | Name                                      | Value                  | Default | Unit | Change Mode | Page                                     |
|-----------|-----------------------|-------------------------------------------|------------------------|---------|------|-------------|------------------------------------------|
| H19.105   | 2019-6Ah              | Target value of position comparison 36    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.105" on page 915</a> |
| H19.107   | 2019-6Ch              | Attribute value of position comparison 36 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.107" on page 915</a> |
| H19.108   | 2019-6Dh              | Target value of position comparison 37    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.108" on page 916</a> |
| H19.110   | 2019-6Fh              | Attribute value of position comparison 37 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.110" on page 916</a> |
| H19.111   | 2019-70h              | Target value of position comparison 38    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.111" on page 916</a> |
| H19.113   | 2019-72h              | Attribute value of position comparison 38 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.113" on page 916</a> |
| H19.114   | 2019-73h              | Target value of position comparison 39    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.114" on page 917</a> |
| H19.116   | 2019-75h              | Attribute value of position comparison 39 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.116" on page 917</a> |
| H19.117   | 2019-76h              | Target value of position comparison 40    | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H19_en.117" on page 917</a> |
| H19.119   | 2019-78h              | Attribute value of position comparison 40 | See H19.02.            | 0       | -    | Real-time   | <a href="#">"H19_en.119" on page 918</a> |

### 3.23 H1F Software Tool Parameters

| Parameter | Communication Address | Name                                           | Value   | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|------------------------------------------------|---------|---------|------|--------------|-----------------------------------------|
| H1F.90    | 201F-5Bh              | DI function state 1 read through communication | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H1F_en.90" on page 918</a> |
| H1F.91    | 201F-5Ch              | DI function state 2 read through communication | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H1F_en.91" on page 918</a> |
| H1F.92    | 201F-5Dh              | DI function state 3 read through communication | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H1F_en.92" on page 919</a> |
| H1F.93    | 201F-5Eh              | DI function state 4 read through communication | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H1F_en.93" on page 919</a> |
| H1F.94    | 201F-5Fh              | DO function state 1 read through communication | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H1F_en.94" on page 919</a> |
| H1F.95    | 201F-60h              | DO function state 2 read through communication | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H1F_en.95" on page 920</a> |
| H1F.25    | 201F-1Ah              | Default speed of usability operation           | 0-65535 | 1000    | -    | Real-time    | <a href="#">"H1F_en.25" on page 920</a> |

### 3.24 H21 Current Loop Gain Switchover Parameters

| Parameter | Communication Address | Name                         | Value                         | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------|-------------------------------|---------|------|-------------|-----------------------------------------|
| H21.00    | 2021-01h              | Current loop gain switchover | 0: No operation<br>1: Enabled | 0       | -    | Real-time   | <a href="#">"H21_en.00" on page 920</a> |

### 3.25 H22 Process Segment Parameters

| Parameter | Communication Address | Name                                                         | Value                                                                                                                                                                                                                                                                                                              | Default     | Unit           | Change Mode  | Page                                    |
|-----------|-----------------------|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------|--------------|-----------------------------------------|
| H22.00    | 2022-01h              | Process segment command trigger                              | 0–1000                                                                                                                                                                                                                                                                                                             | 0           | -              | Real-time    | <a href="#">"H22_en.00" on page 418</a> |
| H22.01    | 2022-02h              | Process segment triggered by the event rising edge           | 0–65535                                                                                                                                                                                                                                                                                                            | 0           | -              | Real-time    | <a href="#">"H22_en.01" on page 419</a> |
| H22.02    | 2022-03h              | Process segment triggered by the event falling edge          | 0–65535                                                                                                                                                                                                                                                                                                            | 0           | -              | Real-time    | <a href="#">"H22_en.02" on page 419</a> |
| H22.03    | 2022-04h              | Acceleration/Deceleration time upon technology segment pause | 0: Acceleration/Deceleration time<br>1: Acceleration/Deceleration time 1<br>2: Acceleration/Deceleration time 2<br>3: Acceleration/Deceleration time 3<br>4: Acceleration/Deceleration time 4<br>5: Acceleration/Deceleration time 5<br>6: Acceleration/Deceleration time 6<br>7: Acceleration/Deceleration time 7 | 0           | -              | Real-time    | <a href="#">"H22_en.03" on page 420</a> |
| H22.04    | 2022-05h              | Positive software position limit                             | -2147483648 to 2147483647                                                                                                                                                                                                                                                                                          | 2147483647  | Reference unit | Real-time    | <a href="#">"H22_en.04" on page 421</a> |
| H22.06    | 2022-07h              | Negative software position limit                             | -2147483648 to 2147483647                                                                                                                                                                                                                                                                                          | -2147483648 | Reference unit | Real-time    | <a href="#">"H22_en.06" on page 421</a> |
| H22.08    | 2022-09h              | Process segment number                                       | 0–65535                                                                                                                                                                                                                                                                                                            | 0           | -              | Unchangeable | <a href="#">"H22_en.08" on page 421</a> |
| H22.09    | 2022-0Ah              | Process segment function switch                              | 0–65535                                                                                                                                                                                                                                                                                                            | 0           | -              | At stop      | <a href="#">"H22_en.09" on page 421</a> |
| H22.10    | 2022-0Bh              | Process segment state                                        | 0–65535                                                                                                                                                                                                                                                                                                            | 0           | -              | Unchangeable | <a href="#">"H22_en.10" on page 422</a> |

| Parameter | Communication Address | Name                             | Value                              | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------|------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H22.19    | 2022-14h              | Target speed                     | 0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm] | 50.0    | [mm/s]/[rpm] | Real-time   | <a href="#">"H22_en.19" on page 422</a> |
| H22.20    | 2022-15h              | Target speed 1                   | 0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm] | 200.0   | [mm/s]/[rpm] | Real-time   | <a href="#">"H22_en.20" on page 423</a> |
| H22.21    | 2022-16h              | Target speed 2                   | 0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm] | 500.0   | [mm/s]/[rpm] | Real-time   | <a href="#">"H22_en.21" on page 423</a> |
| H22.22    | 2022-17h              | Target speed 3                   | 0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm] | 1000.0  | [mm/s]/[rpm] | Real-time   | <a href="#">"H22_en.22" on page 423</a> |
| H22.23    | 2022-18h              | Target speed 4                   | 0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm] | 1500.0  | [mm/s]/[rpm] | Real-time   | <a href="#">"H22_en.23" on page 423</a> |
| H22.24    | 2022-19h              | Target speed 5                   | 0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm] | 2000.0  | [mm/s]/[rpm] | Real-time   | <a href="#">"H22_en.24" on page 424</a> |
| H22.25    | 2022-1Ah              | Target speed 6                   | 0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm] | 2500.0  | [mm/s]/[rpm] | Real-time   | <a href="#">"H22_en.25" on page 424</a> |
| H22.26    | 2022-1Bh              | Target speed 7                   | 0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm] | 3000.0  | [mm/s]/[rpm] | Real-time   | <a href="#">"H22_en.26" on page 424</a> |
| H22.35    | 2022-24h              | Accel/Decel time                 | 0 ms to 65535 ms                   | 50      | ms           | Real-time   | <a href="#">"H22_en.35" on page 424</a> |
| H22.36    | 2022-25h              | Acceleration/Deceleration time 1 | 0 ms to 65535 ms                   | 200     | ms           | Real-time   | <a href="#">"H22_en.36" on page 425</a> |
| H22.37    | 2022-26h              | Acceleration/Deceleration time 2 | 0 ms to 65535 ms                   | 500     | ms           | Real-time   | <a href="#">"H22_en.37" on page 425</a> |
| H22.38    | 2022-27h              | Acceleration/Deceleration time 3 | 0 ms to 65535 ms                   | 1000    | ms           | Real-time   | <a href="#">"H22_en.38" on page 425</a> |
| H22.39    | 2022-28h              | Acceleration/Deceleration time 4 | 0 ms to 65535 ms                   | 1500    | ms           | Real-time   | <a href="#">"H22_en.39" on page 426</a> |
| H22.40    | 2022-29h              | Acceleration/Deceleration time 5 | 0 ms to 65535 ms                   | 2000    | ms           | Real-time   | <a href="#">"H22_en.40" on page 426</a> |
| H22.41    | 2022-2Ah              | Acceleration/Deceleration time 6 | 0 ms to 65535 ms                   | 2500    | ms           | Real-time   | <a href="#">"H22_en.41" on page 426</a> |



| Parameter | Communication Address | Name                                                 | Value            | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------------------------|------------------|---------|------|-------------|-----------------------------------------|
| H22.42    | 2022-2Bh              | Acceleration/Deceleration time 7                     | 0 ms to 65535 ms | 3000    | ms   | Real-time   | <a href="#">"H22_en.42" on page 426</a> |
| H22.51    | 2022-34h              | Delay after completion of the process segment        | 0 ms to 65535 ms | 0       | ms   | Real-time   | <a href="#">"H22_en.51" on page 427</a> |
| H22.52    | 2022-35h              | Delay time 1 after completion of the process segment | 0 ms to 65535 ms | 50      | ms   | Real-time   | <a href="#">"H22_en.52" on page 427</a> |
| H22.53    | 2022-36h              | Delay time 2 after completion of the process segment | 0 ms to 65535 ms | 200     | ms   | Real-time   | <a href="#">"H22_en.53" on page 427</a> |
| H22.54    | 2022-37h              | Delay time 3 after completion of the process segment | 0 ms to 65535 ms | 500     | ms   | Real-time   | <a href="#">"H22_en.54" on page 427</a> |
| H22.55    | 2022-38h              | Delay time 4 after completion of the process segment | 0 ms to 65535 ms | 1000    | ms   | Real-time   | <a href="#">"H22_en.55" on page 428</a> |
| H22.56    | 2022-39h              | Delay time 5 after completion of the process segment | 0 ms to 65535 ms | 1500    | ms   | Real-time   | <a href="#">"H22_en.56" on page 428</a> |
| H22.57    | 2022-3Ah              | Delay time 6 after completion of the process segment | 0 ms to 65535 ms | 2000    | ms   | Real-time   | <a href="#">"H22_en.57" on page 428</a> |
| H22.58    | 2022-3Bh              | Delay time 7 after completion of the process segment | 0 ms to 65535 ms | 3000    | ms   | Real-time   | <a href="#">"H22_en.58" on page 429</a> |
| H22.70    | 2022-47h              | Homing mode                                          | -32768–32767     | -2      | -    | Real-time   | <a href="#">"H22_en.70" on page 429</a> |

| Parameter | Communication Address | Name                                              | Value                          | Default | Unit           | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------------------------|--------------------------------|---------|----------------|-------------|-----------------------------------------|
| H22.71    | 2022-48h              | Speed of high-speed search for home switch signal | 0[mm/s]/[rpm]–3000[mm/s]/[rpm] | 100     | [mm/s]/[rpm]   | Real-time   | <a href="#">"H22_en.71" on page 429</a> |
| H22.72    | 2022-49h              | Speed of low-speed search for home switch signal  | 0[mm/s]/[rpm]–1000[mm/s]/[rpm] | 10      | [mm/s]/[rpm]   | Real-time   | <a href="#">"H22_en.72" on page 430</a> |
| H22.73    | 2022-4Ah              | Acceleration/Deceleration time during homing      | 0 ms to 1000 ms                | 1000    | ms             | Real-time   | <a href="#">"H22_en.73" on page 430</a> |
| H22.74    | 2022-4Bh              | Home search time limit                            | 0 ms to 65535 ms               | 10000   | ms             | Real-time   | <a href="#">"H22_en.74" on page 430</a> |
| H22.75    | 2022-4Ch              | Mechanical home offset                            | -2147483648 to 2147483647      | 0       | Reference unit | Real-time   | <a href="#">"H22_en.75" on page 430</a> |
| H22.79    | 2022-50h              | Relative/Absolute homing                          | 0–65535                        | 0       | -              | Real-time   | <a href="#">"H22_en.79" on page 431</a> |
| H22.83    | 2022-54h              | Jump count threshold                              | 0–65534                        | 0       | -              | Real-time   | <a href="#">"H22_en.83" on page 431</a> |
| H22.84    | 2022-55h              | Jump count threshold 1                            | 0–65534                        | 20      | -              | Real-time   | <a href="#">"H22_en.84" on page 431</a> |
| H22.85    | 2022-56h              | Jump count threshold 2                            | 0–65534                        | 40      | -              | Real-time   | <a href="#">"H22_en.85" on page 432</a> |
| H22.86    | 2022-57h              | Jump count threshold 3                            | 0–65534                        | 80      | -              | Real-time   | <a href="#">"H22_en.86" on page 432</a> |
| H22.87    | 2022-58h              | Jump count threshold 4                            | 0–65534                        | 160     | -              | Real-time   | <a href="#">"H22_en.87" on page 432</a> |
| H22.88    | 2022-59h              | Jump count threshold 5                            | 0–65534                        | 320     | -              | Real-time   | <a href="#">"H22_en.88" on page 432</a> |
| H22.89    | 2022-5Ah              | Jump count threshold 6                            | 0–65534                        | 640     | -              | Real-time   | <a href="#">"H22_en.89" on page 433</a> |
| H22.90    | 2022-5Bh              | Jump count threshold 7                            | 0–65534                        | 1280    | -              | Real-time   | <a href="#">"H22_en.90" on page 433</a> |

### 3.26 H23 Process Segment Parameters

| Parameter | Communication Address | Name                            | Value                  | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------|------------------------|---------|------|-------------|-----------------------------------------|
| H23.00    | 2023-01h              | Definition of homing            | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.00" on page 433</a> |
| H23.02    | 2023-03h              | Homing data                     | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.02" on page 434</a> |
| H23.04    | 2023-05h              | Definition of process segment 1 | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.04" on page 434</a> |
| H23.06    | 2023-07h              | Data of process segment 1       | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.06" on page 434</a> |
| H23.08    | 2023-09h              | Definition of process segment 2 | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.08" on page 435</a> |
| H23.10    | 2023-0Bh              | Data of process segment 2       | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.10" on page 435</a> |
| H23.12    | 2023-0Dh              | Definition of process segment 3 | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.12" on page 435</a> |
| H23.14    | 2023-0Fh              | Data of process segment 3       | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.14" on page 435</a> |
| H23.16    | 2023-11h              | Definition of process segment 4 | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.16" on page 436</a> |
| H23.18    | 2023-13h              | Data of process segment 4       | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.18" on page 436</a> |
| H23.20    | 2023-15h              | Definition of process segment 5 | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.20" on page 436</a> |
| H23.22    | 2023-17h              | Data of process segment 5       | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.22" on page 436</a> |
| H23.24    | 2023-19h              | Definition of process segment 6 | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.24" on page 437</a> |
| H23.26    | 2023-1Bh              | Data of process segment 6       | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.26" on page 437</a> |
| H23.28    | 2023-1Dh              | Definition of process segment 7 | 0–4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.28" on page 437</a> |
| H23.30    | 2023-1Fh              | Data of process segment 7       | -2147483648–2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.30" on page 438</a> |

| Parameter | Communication Address | Name                             | Value                  | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------|------------------------|---------|------|-------------|-----------------------------------------|
| H23.32    | 2023-21h              | Definition of process segment 8  | 0-4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.32" on page 438</a> |
| H23.34    | 2023-23h              | Data of process segment 8        | -2147483648-2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.34" on page 438</a> |
| H23.36    | 2023-25h              | Definition of process segment 9  | 0-4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.36" on page 438</a> |
| H23.38    | 2023-27h              | Data of process segment 9        | -2147483648-2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.38" on page 439</a> |
| H23.40    | 2023-29h              | Definition of process segment 10 | 0-4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.40" on page 439</a> |
| H23.42    | 2023-2Bh              | Data of process segment 10       | -2147483648-2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.42" on page 439</a> |
| H23.44    | 2023-2Dh              | Definition of process segment 11 | 0-4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.44" on page 439</a> |
| H23.46    | 2023-2Fh              | Data of process segment 11       | -2147483648-2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.46" on page 440</a> |
| H23.48    | 2023-31h              | Definition of process segment 12 | 0-4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.48" on page 440</a> |
| H23.50    | 2023-33h              | Data of process segment 12       | -2147483648-2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.50" on page 440</a> |
| H23.52    | 2023-35h              | Definition of process segment 13 | 0-4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.52" on page 441</a> |
| H23.54    | 2023-37h              | Data of process segment 13       | -2147483648-2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.54" on page 441</a> |
| H23.56    | 2023-39h              | Definition of process segment 14 | 0-4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.56" on page 441</a> |
| H23.58    | 2023-3Bh              | Data of process segment 14       | -2147483648-2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.58" on page 441</a> |
| H23.60    | 2023-3Dh              | Definition of process segment 15 | 0-4294967295           | 0       | -    | Real-time   | <a href="#">"H23_en.60" on page 442</a> |
| H23.62    | 2023-3Fh              | Data of process segment 15       | -2147483648-2147483647 | 0       | -    | Real-time   | <a href="#">"H23_en.62" on page 442</a> |

## 3.27 H30 Related Variables Read through Communication

| Parameter | Communication Address | Name                                                 | Value   | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|------------------------------------------------------|---------|---------|------|--------------|-----------------------------------------|
| H30.00    | 2030-01h              | Servo state read by communication                    | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H30_en.00" on page 945</a> |
| H30.01    | 2030-02h              | DO function state 1 read through communication       | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H30_en.01" on page 945</a> |
| H30.02    | 2030-03h              | DO function state 2 read through communication       | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H30_en.02" on page 945</a> |
| H30.16    | 2030-11h              | 1st encoder communication timeout count              | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H30_en.16" on page 946</a> |
| H30.17    | 2030-12h              | 1st encoder communication CRC error count            | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H30_en.17" on page 946</a> |
| H30.18    | 2030-13h              | 1st encoder communication frame stop bit error count | 0-65535 | 0       | -    | Unchangeable | <a href="#">"H30_en.18" on page 946</a> |

## 3.28 H31 References Set through Communication

| Parameter | Communication Address | Name                                                          | Value              | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------------------------------------|--------------------|---------|------|-------------|-----------------------------------------|
| H31.00    | 2031-01h              | VDI virtual level set through communication                   | 0-65535            | 0       | -    | Real-time   | <a href="#">"H31_en.00" on page 947</a> |
| H31.01    | 2031-02h              | Frequency-division output frequency set through communication | 0 Hz-16000000 Hz   | 0       | Hz   | Real-time   | <a href="#">"H31_en.01" on page 947</a> |
| H31.04    | 2031-05h              | DO state set through communication                            | 0-65535            | 0       | -    | Real-time   | <a href="#">"H31_en.04" on page 947</a> |
| H31.05    | 2031-06h              | AO set through communication                                  | -10000 mV-10000 mV | 0       | mV   | Real-time   | <a href="#">"H31_en.05" on page 948</a> |

| Parameter | Communication Address | Name                                   | Value                                      | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------------|--------------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H31.09    | 2031-0Ah              | Speed reference set via communication  | -9999.000[mm/s]/[rpm]–9999.000[mm/s]/[rpm] | 0.000   | [mm/s]/[rpm] | Real-time   | <a href="#">"H31_en.09" on page 948</a> |
| H31.11    | 2031-0Ch              | Torque reference set via communication | -100.000% to 100.000%                      | 0.000   | %            | Real-time   | <a href="#">"H31_en.11" on page 948</a> |

### 3.29 H32 Direct Drive Parameters

| Parameter | Communication Address | Name                                                | Value                                                          | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|-----------------------------------------------------|----------------------------------------------------------------|---------|------|-------------|-----------------------------------------|
| H32.00    | 2032-01h              | Encoder interpolator mismatch alarm (E124)          | 0: Disabled<br>1: Enabled                                      | 1       | -    | At stop     | <a href="#">"H32_en.00" on page 949</a> |
| H32.01    | 2032-02h              | Encoder interface switchover switch                 | 0: Default encoder interface<br>1: Switching encoder interface | 0       | -    | At stop     | <a href="#">"H32_en.01" on page 949</a> |
| H32.02    | 2032-03h              | Angle auto-tuning upon power-on                     | 0: Disabled<br>1: Enabled                                      | 0       | -    | At stop     | <a href="#">"H32_en.02" on page 949</a> |
| H32.03    | 2032-04h              | Angle auto-tuning switch controlled by control word | 0: Disabled<br>1: Control word 6<br>2: Control word 7          | 0       | -    | At stop     | <a href="#">"H32_en.03" on page 950</a> |
| H32.04    | 2032-05h              | Angle auto-tuning state                             | bit0: bit7 of 6041<br>bit1: E602.9                             | 0       | -    | At stop     | <a href="#">"H32_en.04" on page 950</a> |
| H32.05    | 2032-06h              | Pre-positioning retract selection                   | 0: Disabled<br>1: Enabled                                      | 0       | -    | At stop     | <a href="#">"H32_en.05" on page 950</a> |
| H32.06    | 2032-07h              | Position feedback                                   | 0: Disabled<br>1: Enabled                                      | 0       | -    | At stop     | <a href="#">"H32_en.06" on page 951</a> |
| H32.07    | 2032-08h              | Incremental homing method                           | 0: Z Signal short circuit<br>1: Only first short circuit       | 1       | -    | At stop     | <a href="#">"H32_en.07" on page 951</a> |
| H32.08    | 2032-09h              | Homing signal width                                 | 100–65535                                                      | 800     | -    | At stop     | <a href="#">"H32_en.08" on page 951</a> |

| Parameter | Communication Address | Name                                                                                  | Value                                | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------------------------------------------------------------|--------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H32.10    | 2032-0Bh              | Max. reference current in angle auto-tuning through inching                           | 10.0% to 300.0%                      | 100.0   | %            | At stop     | <a href="#">"H32_en.10" on page 951</a> |
| H32.13    | 2032-0Eh              | Motor operation threshold (ROT/DDR) in angle auto-tuning through inching              | 0.001deg to 20.000deg                | 0.200   | deg          | At stop     | <a href="#">"H32_en.13" on page 952</a> |
| H32.14    | 2032-0Fh              | Motor standstill threshold (ROT/DDR) in angle auto-tuning through inching             | 0.1[mm/s]/[rpm]–100.0[mm/s]/[rpm]    | 1.0     | [mm/s]/[rpm] | At stop     | <a href="#">"H32_en.14" on page 952</a> |
| H32.15    | 2032-10h              | Motor operation threshold (DDL) in angle auto-tuning through inching                  | 0.001 millimeters–20.000 millimeters | 0.200   | mm           | At stop     | <a href="#">"H32_en.15" on page 952</a> |
| H32.16    | 2032-11h              | Motor standstill threshold (DDL) in angle auto-tuning through inching                 | 0.1 mm/s–100.0 mm/s                  | 1.0     | mm/s         | At stop     | <a href="#">"H32_en.16" on page 953</a> |
| H32.18    | 2032-13h              | Motor standstill threshold for inching angle auto-tuning                              | 0.1s to 10.0s                        | 0.5     | s            | At stop     | <a href="#">"H32_en.18" on page 953</a> |
| H32.20    | 2032-15h              | Max. reference current in angle auto-tuning through pre-positioning (closed-loop)     | 10.0% to 300.0%                      | 100.0   | %            | At stop     | <a href="#">"H32_en.20" on page 953</a> |
| H32.22    | 2032-17h              | Electrical angle reference in angle auto-tuning through pre-positioning (closed-loop) | 0.0deg to 360.0deg                   | 0.0     | deg          | At stop     | <a href="#">"H32_en.22" on page 954</a> |

| Parameter | Communication Address | Name                                                                                               | Value                                             | Default | Unit                | Change Mode | Page                                    |
|-----------|-----------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------|---------|---------------------|-------------|-----------------------------------------|
| H32.23    | 2032-18h              | Electrical angle reference change range in angle auto-tuning through pre-positioning (closed-loop) | 10.0deg to 170.0deg                               | 90.0    | deg                 | At stop     | <a href="#">"H32_en.23" on page 954</a> |
| H32.24    | 2032-19h              | Motor stop threshold (ROT/DDR) in angle auto-tuning through pre-positioning (closed-loop)          | 0.1[mm/s]/[rpm]–100.0[mm/s]/[rpm]                 | 1.0     | [mm/s]/[rpm]        | At stop     | <a href="#">"H32_en.24" on page 954</a> |
| H32.25    | 2032-1Ah              | Motor stop threshold (DDL) in angle auto-tuning through pre-positioning (closed-loop)              | 0.1 mm/s–100.0 mm/s                               | 1.0     | mm/s                | At stop     | <a href="#">"H32_en.25" on page 954</a> |
| H32.26    | 2032-1Bh              | Damping in angle auto-tuning through pre-positioning (closed-loop)                                 | 0.00[N/(m/s)]/[N·m/rpm]–655.35[N/(m/s)]/[N·m/rpm] | 0.00    | [N/(m/s)]/[N·m/rpm] | At stop     | <a href="#">"H32_en.26" on page 955</a> |
| H32.29    | 2032-1Eh              | Motor standstill threshold for close-loop pre-positioning angle auto-tuning                        | 0.1s to 10.0s                                     | 0.5     | s                   | At stop     | <a href="#">"H32_en.29" on page 955</a> |
| H32.30    | 2032-1Fh              | Max. reference current in angle auto-tuning through position lock                                  | 10.0% to 300.0%                                   | 100.0   | %                   | At stop     | <a href="#">"H32_en.30" on page 955</a> |
| H32.33    | 2032-22h              | Motor operation threshold (ROT/DDR) in angle auto-tuning through position lock                     | 0.001deg to 20.000deg                             | 0.200   | deg                 | At stop     | <a href="#">"H32_en.33" on page 956</a> |



| Parameter | Communication Address | Name                                                                            | Value                                                        | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|---------------------------------------------------------------------------------|--------------------------------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H32.34    | 2032-23h              | Motor standstill threshold (ROT/DDR) in angle auto-tuning through position lock | 0.1[mm/s]/[rpm]–100.0[mm/s]/[rpm]                            | 1.0     | [mm/s]/[rpm] | At stop     | <a href="#">"H32_en.34" on page 956</a> |
| H32.35    | 2032-24h              | Motor operation threshold (DDL) in angle auto-tuning through position lock      | 0.001 millimeters–20.000 millimeters                         | 0.200   | mm           | At stop     | <a href="#">"H32_en.35" on page 956</a> |
| H32.36    | 2032-25h              | Motor standstill threshold (DDL) in angle auto-tuning through position lock     | 0.1 mm/s–100.0 mm/s                                          | 1.0     | mm/s         | At stop     | <a href="#">"H32_en.36" on page 957</a> |
| H32.37    | 2032-26h              | Angle gain in angle auto-tuning through position lock                           | 0deg/(p/s)–10000deg/(p/s)                                    | 1000    | deg/(p/s)    | At stop     | <a href="#">"H32_en.37" on page 957</a> |
| H32.38    | 2032-27h              | Inertia ratio in angle auto-tuning through position lock                        | 0.00–120.00                                                  | 0.00    | -            | At stop     | <a href="#">"H32_en.38" on page 957</a> |
| H32.39    | 2032-28h              | Gain class in angle auto-tuning through position lock                           | 4level to 31level                                            | 16      | level        | At stop     | <a href="#">"H32_en.39" on page 958</a> |
| H32.40    | 2032-29h              | Left/Right limit function                                                       | 1. Left limit being positive<br>2. Left limit being negative | 0       | -            | Real-time   | <a href="#">"H32_en.40" on page 958</a> |
| H32.41    | 2032-2Ah              | Angle auto-tuning delay upon power-on                                           | 0 ms to 65535 ms                                             | 3       | ms           | Real-time   | <a href="#">"H32_en.41" on page 958</a> |
| H32.45    | 2032-2Eh              | Black box channel                                                               | 0–1                                                          | 0       | -            | At stop     | <a href="#">"H32_en.45" on page 959</a> |
| H32.50    | 2032-33h              | 32-bit range compatibility                                                      | 0–99                                                         | 1       | -            | At stop     | <a href="#">"H32_en.50" on page 959</a> |
| H32.53    | 2032-36h              | Motor standstill threshold for position lock angle auto-tuning                  | 0.1s to 10.0s                                                | 0.5     | s            | At stop     | <a href="#">"H32_en.53" on page 959</a> |

| Parameter | Communication Address | Name                                      | Value                                                                                                                                             | Default | Unit         | Change Mode | Page                                    |
|-----------|-----------------------|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|---------|--------------|-------------|-----------------------------------------|
| H32.54    | 2032-37h              | Hall auto-tuning selection                | 0-65535                                                                                                                                           | 0       | -            | At stop     | <a href="#">"H32_en.54" on page 959</a> |
| H32.55    | 2032-38h              | Hall signal UVW manual adjustment         | 0-7                                                                                                                                               | 0       | -            | At stop     | <a href="#">"H32_en.55" on page 960</a> |
| H32.56    | 2032-39h              | UVW filter time of Hall signal            | 0 ms to 10 ms                                                                                                                                     | 5       | ms           | Real-time   | <a href="#">"H32_en.56" on page 960</a> |
| H32.57    | 2032-3Ah              | Hall closed-loop locked-rotor speed       | 0[mm/s]/[rpm]-65535[mm/s]/[rpm]                                                                                                                   | 2       | [mm/s]/[rpm] | At stop     | <a href="#">"H32_en.57" on page 960</a> |
| H32.58    | 2032-3Bh              | Hall closed-loop locked-rotor current     | 0.0% to 300.0%                                                                                                                                    | 120.0   | %            | At stop     | <a href="#">"H32_en.58" on page 961</a> |
| H32.59    | 2032-3Ch              | Hall closed-loop locked-rotor window time | 0 ms to 2000 ms                                                                                                                                   | 10      | ms           | At stop     | <a href="#">"H32_en.59" on page 961</a> |
| H32.60    | 2032-3Dh              | Hall closed-loop inertia ratio            | 0.00-120.00                                                                                                                                       | 0.00    | -            | At stop     | <a href="#">"H32_en.60" on page 961</a> |
| H32.61    | 2032-3Eh              | Hall closed-loop rigidity                 | 4-31                                                                                                                                              | 16      | -            | At stop     | <a href="#">"H32_en.61" on page 961</a> |
| H32.62    | 2032-3Fh              | Electrical angle save flag                | 0-65535                                                                                                                                           | 0       | -            | Real-time   | <a href="#">"H32_en.62" on page 962</a> |
| H32.63    | 2032-40h              | Hall1 electric angle                      | 0-65535                                                                                                                                           | 0       | -            | At stop     | <a href="#">"H32_en.63" on page 962</a> |
| H32.64    | 2032-41h              | Hall2 electric angle                      | 0-65535                                                                                                                                           | 0       | -            | At stop     | <a href="#">"H32_en.64" on page 962</a> |
| H32.65    | 2032-42h              | Hall3 electric angle                      | 0-65535                                                                                                                                           | 0       | -            | At stop     | <a href="#">"H32_en.65" on page 962</a> |
| H32.66    | 2032-43h              | Hall4 electric angle                      | 0-65535                                                                                                                                           | 0       | -            | At stop     | <a href="#">"H32_en.66" on page 963</a> |
| H32.67    | 2032-44h              | Hall5 electric angle                      | 0-65535                                                                                                                                           | 0       | -            | At stop     | <a href="#">"H32_en.67" on page 963</a> |
| H32.68    | 2032-45h              | Hall6 electric angle                      | 0-65535                                                                                                                                           | 0       | -            | At stop     | <a href="#">"H32_en.68" on page 963</a> |
| H32.70    | 2032-47h              | Motor overload protection mode            | 0: Internal motor overload curve<br>1: External motor overload curve<br>2: Current limit overload protection<br>3: Hide motor overload protection | 0       | -            | At stop     | <a href="#">"H32_en.70" on page 964</a> |

| Parameter | Communication Address | Name                                                 | Value            | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|------------------------------------------------------|------------------|---------|------|-------------|-----------------------------------------|
| H32.73    | 2032-4Ah              | Thermal threshold current of overload current limit  | 100.0% to 750.0% | 115.0   | %    | At stop     | <a href="#">"H32_en.73" on page 964</a> |
| H32.74    | 2032-4Bh              | Peak current of overload current limit               | 100.0% to 750.0% | 300.0   | %    | At stop     | <a href="#">"H32_en.74" on page 964</a> |
| H32.75    | 2032-4Ch              | Max. current duration of overload protection         | 0.01s to 655.35s | 1.00    | s    | At stop     | <a href="#">"H32_en.75" on page 964</a> |
| H32.76    | 2032-4Dh              | Current limit time constant of overload protection   | 0.01–655.35      | 1.00    | -    | At stop     | <a href="#">"H32_en.76" on page 965</a> |
| H32.77    | 2032-4Eh              | Current limit alarm threshold of overload protection | 0.0% to 750.0%   | 0.0     | %    | At stop     | <a href="#">"H32_en.77" on page 965</a> |
| H32.78    | 2032-4Fh              | Current limit fault threshold of overload protection | 0.0% to 750.0%   | 0.0     | %    | At stop     | <a href="#">"H32_en.78" on page 965</a> |
| H32.79    | 2032-50h              | Thermal threshold current of overload                | 100.0% to 750.0% | 115.0   | %    | At stop     | <a href="#">"H32_en.79" on page 966</a> |
| H32.80    | 2032-51h              | Thermal current interval of overload                 | 0.1% to 204.8%   | 6.4     | %    | At stop     | <a href="#">"H32_en.80" on page 966</a> |
| H32.81    | 2032-52h              | Overload heat dissipation current interval           | 0.1% to 204.8%   | 6.4     | %    | At stop     | <a href="#">"H32_en.81" on page 966</a> |
| H32.82    | 2032-53h              | Length of overload heat dissipation curve            | 1–200            | 1       | -    | At stop     | <a href="#">"H32_en.82" on page 966</a> |
| H32.83    | 2032-54h              | Length of overload heat dissipation curve            | 1–200            | 1       | -    | At stop     | <a href="#">"H32_en.83" on page 967</a> |

### 3.30 H33 Compensation Parameters

| Parameter | Communication Address | Name                     | Value   | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|--------------------------|---------|---------|------|-------------|-----------------------------------------|
| H33.00    | 2033-01h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.00" on page 967</a> |
| H33.01    | 2033-02h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.01" on page 967</a> |
| H33.02    | 2033-03h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.02" on page 968</a> |
| H33.03    | 2033-04h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.03" on page 968</a> |
| H33.04    | 2033-05h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.04" on page 968</a> |
| H33.05    | 2033-06h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.05" on page 968</a> |
| H33.06    | 2033-07h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.06" on page 969</a> |
| H33.07    | 2033-08h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.07" on page 969</a> |
| H33.08    | 2033-09h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.08" on page 969</a> |
| H33.09    | 2033-0Ah              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.09" on page 969</a> |
| H33.10    | 2033-0Bh              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.10" on page 970</a> |
| H33.11    | 2033-0Ch              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.11" on page 970</a> |
| H33.12    | 2033-0Dh              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.12" on page 970</a> |
| H33.13    | 2033-0Eh              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.13" on page 971</a> |
| H33.14    | 2033-0Fh              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.14" on page 971</a> |
| H33.15    | 2033-10h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.15" on page 971</a> |
| H33.16    | 2033-11h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.16" on page 971</a> |
| H33.17    | 2033-12h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.17" on page 972</a> |
| H33.18    | 2033-13h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.18" on page 972</a> |
| H33.19    | 2033-14h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.19" on page 972</a> |

| Parameter | Communication Address | Name                     | Value   | Default | Unit | Change Mode | Page                                    |
|-----------|-----------------------|--------------------------|---------|---------|------|-------------|-----------------------------------------|
| H33.20    | 2033-15h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.20" on page 972</a> |
| H33.21    | 2033-16h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.21" on page 973</a> |
| H33.22    | 2033-17h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.22" on page 973</a> |
| H33.23    | 2033-18h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.23" on page 973</a> |
| H33.24    | 2033-19h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.24" on page 973</a> |
| H33.25    | 2033-1Ah              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.25" on page 974</a> |
| H33.26    | 2033-1Bh              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.26" on page 974</a> |
| H33.27    | 2033-1Ch              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.27" on page 974</a> |
| H33.28    | 2033-1Dh              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.28" on page 975</a> |
| H33.29    | 2033-1Eh              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.29" on page 975</a> |
| H33.30    | 2033-1Fh              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.30" on page 975</a> |
| H33.31    | 2033-20h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.31" on page 975</a> |
| H33.32    | 2033-21h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.32" on page 976</a> |
| H33.33    | 2033-22h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.33" on page 976</a> |
| H33.34    | 2033-23h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.34" on page 976</a> |
| H33.35    | 2033-24h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.35" on page 976</a> |
| H33.36    | 2033-25h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.36" on page 977</a> |
| H33.37    | 2033-26h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.37" on page 977</a> |
| H33.38    | 2033-27h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.38" on page 977</a> |
| H33.39    | 2033-28h              | Compensation data BUFFER | 0-65535 | 0       | -    | At stop     | <a href="#">"H33_en.39" on page 977</a> |

| Parameter | Communication Address | Name                                             | Value                                              | Default | Unit       | Change Mode  | Page                                    |
|-----------|-----------------------|--------------------------------------------------|----------------------------------------------------|---------|------------|--------------|-----------------------------------------|
| H33.40    | 2033-29h              | Current Compensation BUFFER group number         | 0–65535                                            | 0       | -          | At stop      | <a href="#">"H33_en.40" on page 978</a> |
| H33.41    | 2033-2Ah              | Compensation data sum                            | 0–32767                                            | 0       | -          | At stop      | <a href="#">"H33_en.41" on page 978</a> |
| H33.44    | 2033-2Dh              | Data command                                     | 0–1                                                | 1       | -          | At stop      | <a href="#">"H33_en.44" on page 978</a> |
| H33.45    | 2033-2Eh              | Data storage position                            | 0: Servo RAM<br>1: Servo FLASH<br>2: Encoder FLASH | 1       | -          | At stop      | <a href="#">"H33_en.45" on page 979</a> |
| H33.46    | 2033-2Fh              | Data clear                                       | 0–3                                                | 0       | -          | At stop      | <a href="#">"H33_en.46" on page 979</a> |
| H33.47    | 2033-30h              | Software tool write status                       | 0–2                                                | 0       | -          | At stop      | <a href="#">"H33_en.47" on page 979</a> |
| H33.48    | 2033-31h              | Servo read status                                | 0–65535                                            | 0       | -          | Unchangeable | <a href="#">"H33_en.48" on page 979</a> |
| H33.49    | 2033-32h              | Software tool read status                        | 0–2                                                | 0       | -          | At stop      | <a href="#">"H33_en.49" on page 980</a> |
| H33.50    | 2033-33h              | Servo write status                               | 0–2                                                | 0       | -          | Unchangeable | <a href="#">"H33_en.50" on page 980</a> |
| H33.51    | 2033-34h              | Data transmission completed flag                 | 0–1                                                | 0       | -          | At stop      | <a href="#">"H33_en.51" on page 980</a> |
| H33.52    | 2033-35h              | Servo data transfer completed flag               | 0–1                                                | 0       | -          | Unchangeable | <a href="#">"H33_en.52" on page 980</a> |
| H33.60    | 2033-3Dh              | Accuracy compensation function                   | 0–1                                                | 0       | -          | At stop      | <a href="#">"H33_en.60" on page 981</a> |
| H33.61    | 2033-3Eh              | Accuracy compensation sum                        | 0count to 65535count                               | 0       | count      | At stop      | <a href="#">"H33_en.61" on page 981</a> |
| H33.62    | 2033-3Fh              | Starting offset address of accuracy compensation | -21474836.48[mm]/[deg]–21474836.47[mm]/[deg]       | 0.00    | [mm]/[deg] | At stop      | <a href="#">"H33_en.62" on page 981</a> |
| H33.64    | 2033-41h              | Accuracy compensation data interval              | -327.67[mm]/[deg]–327.67[mm]/[deg]                 | 0.00    | [mm]/[deg] | At stop      | <a href="#">"H33_en.64" on page 982</a> |

| Parameter | Communication Address | Name                                                                            | Value                              | Default | Unit         | Change Mode  | Page                                    |
|-----------|-----------------------|---------------------------------------------------------------------------------|------------------------------------|---------|--------------|--------------|-----------------------------------------|
| H33.65    | 2033-42h              | Accuracy compensation dial phase sequence                                       | 0–65535                            | 0       | -            | At stop      | <a href="#">"H33_en.65" on page 982</a> |
| H33.66    | 2033-43h              | Accuracy compensation dial reference direction                                  | 0–1                                | 0       | -            | At stop      | <a href="#">"H33_en.66" on page 982</a> |
| H33.67    | 2033-44h              | Servo homing completed                                                          | 0–65535                            | 0       | -            | Unchangeable | <a href="#">"H33_en.67" on page 982</a> |
| H33.68    | 2033-45h              | Current acting index of accuracy compensation                                   | 0–65535                            | 0       | -            | Unchangeable | <a href="#">"H33_en.68" on page 983</a> |
| H33.69    | 2033-46h              | Forced homing start                                                             | 0–1                                | 0       | -            | At stop      | <a href="#">"H33_en.69" on page 983</a> |
| H33.70    | 2033-47h              | Forced homing mode                                                              | -32768–32767                       | -2      | -            | At stop      | <a href="#">"H33_en.70" on page 983</a> |
| H33.71    | 2033-48h              | Forced homing at low speed                                                      | 0[mm/s]/[rpm]–1000[mm/s]/[rpm]     | 10      | [mm/s]/[rpm] | At stop      | <a href="#">"H33_en.71" on page 983</a> |
| H33.72    | 2033-49h              | Single-turn absolute position of accuracy compensation home of absolute encoder | 0p to 4294967295p                  | 0       | p            | At stop      | <a href="#">"H33_en.72" on page 984</a> |
| H33.74    | 2033-4Bh              | Min.pulse width of frequency-division output accuracy compensation              | 2count to 7count                   | 3       | count        | At stop      | <a href="#">"H33_en.74" on page 984</a> |
| H33.75    | 2033-4Ch              | Accuracy compensation data unit                                                 | 0: [um]/[arcsec]<br>1: [mm]/[mrad] | 0       | -            | At stop      | <a href="#">"H33_en.75" on page 984</a> |
| H33.81    | 2033-52h              | Motor cogging torque ripple compensation sum                                    | 0count to 65535count               | 2000    | count        | At stop      | <a href="#">"H33_en.81" on page 985</a> |

### 3.31 H34 Servo Motor Parameters 2

| Parameter | Communication Address | Name                                       | Value   | Default | Unit | Change Mode  | Page                                    |
|-----------|-----------------------|--------------------------------------------|---------|---------|------|--------------|-----------------------------------------|
| H34.12    | 2034-0Dh              | Error type supported by EnDat2.2 encoder   | 0–65535 | 0       | -    | Unchangeable | <a href="#">"H34_en.12" on page 985</a> |
| H34.13    | 2034-0Eh              | Alarm types supported by EnDat2.2 encoders | 0–65535 | 0       | -    | Unchangeable | <a href="#">"H34_en.13" on page 986</a> |
| H34.14    | 2034-0Fh              | Error values supported by EnDat2.2 encoder | 0–65535 | 0       | -    | Unchangeable | <a href="#">"H34_en.14" on page 986</a> |
| H34.15    | 2034-10h              | Alarm values supported by EnDat2.2 encoder | 0–65535 | 0       | -    | Unchangeable | <a href="#">"H34_en.15" on page 987</a> |

### 3.32 List of 1000h Object Dictionary

| Parameter | Comm. Add. | Name           | Value            | Default | Unit | Change Mode  | Page                                      |
|-----------|------------|----------------|------------------|---------|------|--------------|-------------------------------------------|
| 1000.00h  | 1000-00h   | Device type    | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1000_en.00h" on page 987</a> |
| 1001.00h  | 1001-00h   | Error Register | 0s to 0xFF       | 0       | -    | Unchangeable | <a href="#">"1001_en.00h" on page 987</a> |
| 1018.01h  | 1018-01h   | Vendor ID      | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1018_en.01h" on page 988</a> |
| 1018.02h  | 1018-02h   | Product Code   | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1018_en.02h" on page 988</a> |
| 1018.03h  | 1018-03h   | Revision       | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1018_en.03h" on page 988</a> |
| 1018.04h  | 1018-04h   | Serial number  | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1018_en.04h" on page 988</a> |



| Parameter | Comm. Add. | Name                                    | Value            | Default | Unit | Change Mode  | Page                                      |
|-----------|------------|-----------------------------------------|------------------|---------|------|--------------|-------------------------------------------|
| 1600.00h  | 1600-00h   | Number of valid mapped objects in RPDO1 | 0–20             | 0       | -    | Unchangeable | <a href="#">"1600_en.00h" on page 989</a> |
| 1600.01h  | 1600-01h   | Mapped object 1 in RPDO1                | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.01h" on page 989</a> |
| 1600.02h  | 1600-02h   | Mapped object 2 in RPDO1                | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.02h" on page 989</a> |
| 1600.03h  | 1600-03h   | Mapped object 3 in RPDO1                | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.03h" on page 990</a> |
| 1600.04h  | 1600-04h   | Mapped object 4 in RPDO1                | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.04h" on page 990</a> |
| 1600.05h  | 1600-05h   | Mapped object 5 in RPDO1                | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.05h" on page 990</a> |
| 1600.06h  | 1600-06h   | Mapped object 6 in RPDO1                | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.06h" on page 990</a> |
| 1600.07h  | 1600-07h   | Mapped object 7 in RPDO1                | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.07h" on page 991</a> |
| 1600.08h  | 1600-08h   | Mapped object 8 in RPDO1                | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.08h" on page 991</a> |
| 1600.09h  | 1600-09h   | Mapped object 9 in RPDO1                | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.09h" on page 991</a> |
| 1600.0Ah  | 1600-0Ah   | Mapped object 10 in RPDO1               | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.0Ah" on page 992</a> |
| 1600.0Bh  | 1600-0Bh   | Mapped object 11 in RPDO1               | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.0Bh" on page 992</a> |
| 1600.0Ch  | 1600-0Ch   | Mapped object 12 in RPDO1               | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.0Ch" on page 992</a> |
| 1600.0Dh  | 1600-0Dh   | Mapped object 13 in RPDO1               | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.0Dh" on page 992</a> |

| Parameter | Comm. Add. | Name                                    | Value            | Default | Unit | Change Mode  | Page                                      |
|-----------|------------|-----------------------------------------|------------------|---------|------|--------------|-------------------------------------------|
| 1600.0Eh  | 1600-0Eh   | Mapped object 14 in RPDO1               | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.0Eh" on page 993</a> |
| 1600.0Fh  | 1600-0Fh   | Mapped object 15 in RPDO1               | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.0Fh" on page 993</a> |
| 1600.10h  | 1600-10h   | Mapped object 16 in RPDO1               | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.10h" on page 993</a> |
| 1600.11h  | 1600-11h   | Mapped object 17 in RPDO1               | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.11h" on page 993</a> |
| 1600.12h  | 1600-12h   | Mapped object 18 in RPDO1               | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.12h" on page 994</a> |
| 1600.13h  | 1600-13h   | Mapped object 19 in RPDO1               | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.13h" on page 994</a> |
| 1600.14h  | 1600-14h   | Mapped object 20 in RPDO1               | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1600_en.14h" on page 994</a> |
| 1A00.00h  | 1A00-00h   | Number of valid mapped objects in TPDO1 | 0–20             | 0       | -    | Unchangeable | <a href="#">"1A00_en.00h" on page 994</a> |
| 1A00.01h  | 1A00-01h   | Mapped object 1 in TPDO1                | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.01h" on page 995</a> |
| 1A00.02h  | 1A00-02h   | Mapped object 2 in TPDO1                | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.02h" on page 995</a> |
| 1A00.03h  | 1A00-03h   | Mapped object 3 in TPDO1                | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.03h" on page 996</a> |
| 1A00.04h  | 1A00-04h   | Mapped object 4 in TPDO1                | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.04h" on page 996</a> |
| 1A00.05h  | 1A00-05h   | Mapped object 5 in TPDO1                | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.05h" on page 996</a> |
| 1A00.06h  | 1A00-06h   | Mapped object 6 in TPDO1                | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.06h" on page 996</a> |

| Parameter | Comm. Add. | Name                      | Value            | Default | Unit | Change Mode  | Page                                       |
|-----------|------------|---------------------------|------------------|---------|------|--------------|--------------------------------------------|
| 1A00.07h  | 1A00-07h   | Mapped object 7 in TPDO1  | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.07h" on page 997</a>  |
| 1A00.08h  | 1A00-08h   | Mapped object 8 in TPDO1  | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.08h" on page 997</a>  |
| 1A00.09h  | 1A00-09h   | Mapped object 9 in TPDO1  | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.09h" on page 997</a>  |
| 1A00.0Ah  | 1A00-0Ah   | Mapped object 10 in TPDO1 | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.0Ah" on page 997</a>  |
| 1A00.0Bh  | 1A00-0Bh   | Mapped object 11 in TPDO1 | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.0Bh" on page 998</a>  |
| 1A00.0Ch  | 1A00-0Ch   | Mapped object 12 in TPDO1 | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.0Ch" on page 998</a>  |
| 1A00.0Dh  | 1A00-0Dh   | Mapped object 13 in TPDO1 | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.0Dh" on page 998</a>  |
| 1A00.0Eh  | 1A00-0Eh   | Mapped object 14 in TPDO1 | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.0Eh" on page 998</a>  |
| 1A00.0Fh  | 1A00-0Fh   | Mapped object 15 in TPDO1 | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.0Fh" on page 999</a>  |
| 1A00.10h  | 1A00-10h   | Mapped object 16 in TPDO1 | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.10h" on page 999</a>  |
| 1A00.11h  | 1A00-11h   | Mapped object 17 in TPDO1 | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.11h" on page 999</a>  |
| 1A00.12h  | 1A00-12h   | Mapped object 18 in TPDO1 | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.12h" on page 1000</a> |
| 1A00.13h  | 1A00-13h   | Mapped object 19 in TPDO1 | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.13h" on page 1000</a> |
| 1A00.14h  | 1A00-14h   | Mapped object 20 in TPDO1 | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1A00_en.14h" on page 1000</a> |
| 1C12.00h  | 1C12-00h   | Number of assigned PDOs   | 0–2              | 2       | -    | Unchangeable | <a href="#">"1C12_en.00h" on page 1000</a> |

| Parameter | Comm. Add. | Name                                        | Value            | Default | Unit | Change Mode  | Page                                       |
|-----------|------------|---------------------------------------------|------------------|---------|------|--------------|--------------------------------------------|
| 1C12.01h  | 1C12-01h   | PDO mapping object index of assigned RxPDO1 | 0x1600 to 0x17FF | 0x1701  | -    | Unchangeable | <a href="#">"1C12_en.01h" on page 1001</a> |
| 1C12.02h  | 1C12-02h   | PDO mapping object index of assigned RxPDO2 | 0x1600 to 0x17FF | 0x170A  | -    | Unchangeable | <a href="#">"1C12_en.02h" on page 1001</a> |
| 1C13.00h  | 1C13-00h   | Number of assigned PDOs                     | 0–2              | 2       | -    | Unchangeable | <a href="#">"1C13_en.00h" on page 1001</a> |
| 1C13.01h  | 1C13-01h   | PDO mapping object index of assigned TxPDO1 | 0x1A00 to 0x1BFF | 0x1B01  | -    | Unchangeable | <a href="#">"1C13_en.01h" on page 1001</a> |
| 1C13.02h  | 1C13-02h   | PDO mapping object index of assigned TxPDO2 | 0x1A00 to 0x1BFF | 0x1B0A  | -    | Unchangeable | <a href="#">"1C13_en.02h" on page 1002</a> |
| 1C32.01h  | 1C32-01h   | Sync mode                                   | 0s to 0xFFFF     | 0       | -    | Unchangeable | <a href="#">"1C32_en.01h" on page 1002</a> |
| 1C32.02h  | 1C32-02h   | Cycle time                                  | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1C32_en.02h" on page 1002</a> |
| 1C32.04h  | 1C32-04h   | Sync modes supported                        | 0s to 0xFFFF     | 0       | -    | Unchangeable | <a href="#">"1C32_en.04h" on page 1003</a> |
| 1C32.05h  | 1C32-05h   | Minimum cycle time                          | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1C32_en.05h" on page 1003</a> |
| 1C33.01h  | 1C33-01h   | Sync mode                                   | 0s to 0xFFFF     | 0       | -    | Unchangeable | <a href="#">"1C33_en.01h" on page 1003</a> |
| 1C33.02h  | 1C33-02h   | Cycle time                                  | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1C33_en.02h" on page 1003</a> |
| 1C33.04h  | 1C33-04h   | Sync modes supported                        | 0s to 0xFFFF     | 0       | -    | Unchangeable | <a href="#">"1C33_en.04h" on page 1004</a> |
| 1C33.05h  | 1C33-05h   | Minimum cycle time                          | 0s to 0xFFFFFFFF | 0       | -    | Unchangeable | <a href="#">"1C33_en.05h" on page 1004</a> |

### 3.33 List of 6000h Object Dictionary

| Parameter | Comm. Add. | Name               | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Default | Unit | Change Mode  | Page                                 |
|-----------|------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|--------------|--------------------------------------|
| 603Fh     | 603Fh      | Error code         | 0–65535                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0       | -    | Unchangeable | <a href="#">"603Fh" on page 1004</a> |
| 6040h     | 6040h      | Control word       | 0–65535                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0       | -    | Real-time    | <a href="#">"6040h" on page 1005</a> |
| 6041h     | 6041h      | Status word        | 0–65535                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0       | -    | Unchangeable | <a href="#">"6041h" on page 1005</a> |
| 605Ah     | 605Ah      | Quick stop mode    | 0: Coast to stop, keeping de-energized state<br>1: Ramp to stop as defined by 6084h/609Ah (HM), keeping de-energized state<br>2: Ramp to stop as defined by 6085h, keeping de-energized state<br>3: Stop at emergency stop torque, keeping de-energized state<br>5: Ramp to stop as defined by 6084h/609Ah (HM), keeping position lock state<br>6: Ramp to stop as defined by 6085h, keeping position lock state<br>7: Stop at emergency stop torque, keeping position lock state | 2       | -    | Real-time    | <a href="#">"605Ah" on page 1005</a> |
| 605Ch     | 605Ch      | Stop mode at S-OFF | –4: Ramp to stop as defined by 6085h, keeping dynamic braking state<br>–3: at zero speed, keeping dynamic braking state<br>–2: Ramp to stop as defined by 6084h/609Ah (HM), keeping dynamic braking state<br>–1: Dynamic braking stop, keeping dynamic braking state<br>0: Coast to stop, keeping de-energized state<br>1: Ramp to stop as defined by 6084h/609Ah (HM), keeping de-energized state<br>2: Dynamic braking stop, keeping de-energized state                         | 0       | -    | Real-time    | <a href="#">"605Ch" on page 1006</a> |

| Parameter | Comm. Add. | Name                     | Value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Default | Unit | Change Mode | Page                                 |
|-----------|------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|------|-------------|--------------------------------------|
| 605Dh     | 605Dh      | Halt mode                | 1: Ramp to stop as defined by 6084h/ 609Ah (HM), keeping position lock state<br>2: Ramp to stop as defined by 6085h, keeping position lock state<br>3: Stop at emergency stop torque, keeping position lock state                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1       | -    | Real-time   | <a href="#">"605Dh" on page 1007</a> |
| 605Eh     | 605Eh      | Stop mode at No. 2 fault | -5: Stop at zero speed, keeping dynamic braking state<br>-4: Stop at emergency stop torque, keeping dynamic braking state<br>-3: Ramp to stop as defined by 6085h, keeping dynamic braking state<br>-2: Ramp to stop as defined by 6084h/ 609Ah (HM), keeping dynamic braking state<br>-1: Dynamic braking stop, keeping dynamic braking state<br>0: Coast to stop, keeping de-energized state<br>1: Ramp to stop as defined by 6084h/ 609Ah (HM), keeping de-energized state<br>2: Ramp to stop as defined by 6085h, keeping de-energized state<br>3: Stop at emergency stop torque, keeping de-energized state<br>4: Dynamic braking stop, keeping de-energized state | 2       | -    | Real-time   | <a href="#">"605Eh" on page 1007</a> |
| 6060h     | 6060h      | Servo drive mode         | 1: Profile position (PP) mode<br>3: Profile velocity (PV) mode<br>4: Profile torque (PT) mode<br>6: Homing (HM) mode<br>8: CSP mode<br>9: CSV mode<br>10: CST mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0       | -    | Real-time   | <a href="#">"6060h" on page 1008</a> |

| Parameter | Comm. Add. | Name                                                                     | Value                                                                                                                                                              | Default   | Unit             | Change Mode  | Page                                 |
|-----------|------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------|--------------|--------------------------------------|
| 6061h     | 6061h      | Operation mode display                                                   | 1: Profile position (PP) mode<br>3: Profile velocity (PV) mode<br>4: Profile torque (PT) mode<br>6: Homing (HM) mode<br>8: CSP mode<br>9: CSV mode<br>10: CST mode | 0         | -                | Unchangeable | <a href="#">"6061h" on page 1008</a> |
| 6062h     | 6062h      | Position reference                                                       | -2147483648 to 2147483647                                                                                                                                          | 0         | Reference unit   | Unchangeable | <a href="#">"6062h" on page 1009</a> |
| 6063h     | 6063h      | Position actual value                                                    | -2147483648 to +2147483647                                                                                                                                         | 0         | Pulse            | Unchangeable | <a href="#">"6063h" on page 1009</a> |
| 6064h     | 6064h      | Position actual value                                                    | -2147483648 to 2147483647                                                                                                                                          | 0         | Reference unit   | Unchangeable | <a href="#">"6064h" on page 1010</a> |
| 6065h     | 6065h      | Following error window                                                   | 0 to 4294967295                                                                                                                                                    | 219895614 | Reference unit   | Real-time    | <a href="#">"6065h" on page 1010</a> |
| 6066h     | 6066h      | Defines the time lapse to trigger excessive position deviation (EB00.0). | 0 ms to 65535 ms                                                                                                                                                   | 0         | ms               | Real-time    | <a href="#">"6066h" on page 1010</a> |
| 6067h     | 6067h      | Position window                                                          | 0 to 4294967295                                                                                                                                                    | 46976     | Reference unit   | Real-time    | <a href="#">"6067h" on page 1010</a> |
| 6068h     | 6068h      | Position window time                                                     | 0 ms to 65535 ms                                                                                                                                                   | 0         | ms               | Real-time    | <a href="#">"6068h" on page 1011</a> |
| 606Ch     | 606Ch      | Actual speed                                                             | -2147483648 to +2147483647                                                                                                                                         | 0         | Reference unit/s | Unchangeable | <a href="#">"606Ch" on page 1011</a> |
| 606Dh     | 606Dh      | Velocity window                                                          | 0[mm/s]/[rpm]–65535[mm/s]/[rpm]                                                                                                                                    | 10        | [mm/s]/[rpm]     | Real-time    | <a href="#">"606Dh" on page 1011</a> |
| 606Eh     | 606Eh      | Velocity window time                                                     | 0 ms to 65535 ms                                                                                                                                                   | 0         | ms               | Real-time    | <a href="#">"606Eh" on page 1012</a> |
| 606Fh     | 606Fh      | Zero speed signal threshold                                              | 0[mm/s]/[rpm]–65535[mm/s]/[rpm]                                                                                                                                    | 10        | [mm/s]/[rpm]     | Real-time    | <a href="#">"606Fh" on page 1012</a> |
| 6070h     | 6070h      | Velocity threshold time                                                  | 0 ms to 65535 ms                                                                                                                                                   | 0         | ms               | Real-time    | <a href="#">"6070h" on page 1012</a> |
| 6071h     | 6071h      | Target torque                                                            | -4000–4000                                                                                                                                                         | 0         | 0.001            | Real-time    | <a href="#">"6071h" on page 1013</a> |

| Parameter | Comm. Add. | Name                    | Value                     | Default     | Unit                          | Change Mode  | Page                                       |
|-----------|------------|-------------------------|---------------------------|-------------|-------------------------------|--------------|--------------------------------------------|
| 6072h     | 6072h      | Max. torque reference   | 0–4000                    | 3500        | 0.001                         | Real-time    | <a href="#">"6072h" on page 1013</a>       |
| 6074h     | 6074h      | Torque reference        | -4000–4000                | 0           | 0.001                         | Unchangeable | <a href="#">"6074h" on page 1013</a>       |
| 6077h     | 6077h      | Actual torque           | -4000–4000                | 0           | 0.001                         | Unchangeable | <a href="#">"6077h" on page 1014</a>       |
| 607Ah     | 607Ah      | Target position         | -2147483648 to 2147483647 | 0           | Reference unit                | Real-time    | <a href="#">"607Ah" on page 1014</a>       |
| 607Ch     | 607Ch      | Home offset             | -2147483648 to 2147483647 | 0           | Reference unit                | Real-time    | <a href="#">"607Ch" on page 1014</a>       |
| 607D.01h  | 607D-01h   | Min. position limit     | -2147483648 to 2147483647 | -2147483648 | Reference unit                | Real-time    | <a href="#">"607D_en.01h" on page 1015</a> |
| 607D.02h  | 607D-02h   | Max. position limit     | -2147483648 to 2147483647 | 2147483647  | Reference unit                | Real-time    | <a href="#">"607D_en.02h" on page 1015</a> |
| 607Eh     | 607Eh      | Reference polarity      | 0–255                     | 0           | -                             | Real-time    | <a href="#">"607Eh" on page 1016</a>       |
| 607Fh     | 607Fh      | Max. speed              | 0 to 4294967295           | 4294967295  | Reference unit/s              | Real-time    | <a href="#">"607Fh" on page 1016</a>       |
| 6081h     | 6081h      | Profile velocity        | 0 to 4294967295           | 111848106   | Reference unit/s              | Real-time    | <a href="#">"6081h" on page 1016</a>       |
| 6083h     | 6083h      | Profile acceleration    | 0 to 4294967295           | 4294967295  | Reference unit/s <sup>2</sup> | Real-time    | <a href="#">"6083h" on page 1017</a>       |
| 6084h     | 6084h      | Profile deceleration    | 0 to 4294967295           | 4294967295  | Reference unit/s <sup>2</sup> | Real-time    | <a href="#">"6084h" on page 1017</a>       |
| 6085h     | 6085h      | Quick stop deceleration | 0 to 4294967295           | 2147483647  | Reference unit/s <sup>2</sup> | Real-time    | <a href="#">"6085h" on page 1018</a>       |
| 6087h     | 6087h      | Torque slope            | 0–4294967295              | 4294967295  | 0.1%/s                        | Real-time    | <a href="#">"6087h" on page 1018</a>       |
| 6091.01h  | 6091-01h   | Motor resolution        | 1–4294967295              | 1           | -                             | At stop      | <a href="#">"6091_en.01h" on page 1018</a> |
| 6091.02h  | 6091-02h   | Shaft resolution        | 1–4294967295              | 1           | -                             | At stop      | <a href="#">"6091_en.02h" on page 1019</a> |



| Parameter | Comm. Add. | Name                                       | Value                      | Default    | Unit                          | Change Mode  | Page                                       |
|-----------|------------|--------------------------------------------|----------------------------|------------|-------------------------------|--------------|--------------------------------------------|
| 6098h     | 6098h      | Homing method                              | -3–35                      | 1          | -                             | Real-time    | <a href="#">"6098h" on page 1019</a>       |
| 6099.01h  | 6099-01h   | Speed during search for switch             | 0 to 4294967295            | 111848106  | Reference unit/s              | At stop      | <a href="#">"6099_en.01h" on page 1020</a> |
| 6099.02h  | 6099-02h   | Speed during search for zero               | 0 to 4294967295            | 11184810   | Reference unit/s              | At stop      | <a href="#">"6099_en.02h" on page 1021</a> |
| 609Ah     | 609Ah      | Homing acceleration                        | 0 to 4294967295            | 4294967295 | Reference unit/s <sup>2</sup> | Real-time    | <a href="#">"609Ah" on page 1021</a>       |
| 60B0h     | 60B0h      | Position offset                            | -2147483648 to 2147483647  | 0          | Reference unit                | Real-time    | <a href="#">"60B0h" on page 1021</a>       |
| 60B1h     | 60B1h      | Velocity offset                            | -2147483648 to +2147483647 | 0          | Reference unit/s              | Real-time    | <a href="#">"60B1h" on page 1022</a>       |
| 60B2h     | 60B2h      | Torque offset                              | -4000–4000                 | 0          | 0.001                         | Real-time    | <a href="#">"60B2h" on page 1022</a>       |
| 60B8h     | 60B8h      | Touch probe function                       | 0–65535                    | 0          | -                             | Real-time    | <a href="#">"60B8h" on page 1022</a>       |
| 60B9h     | 60B9h      | Touch probe status                         | 0–65535                    | 0          | -                             | Unchangeable | <a href="#">"60B9h" on page 1023</a>       |
| 60BAh     | 60BAh      | Touch probe 1 positive edge position value | -2147483648 to 2147483647  | 0          | Reference unit                | Unchangeable | <a href="#">"60BAh" on page 1024</a>       |
| 60BBh     | 60BBh      | Touch probe 1 negative edge position value | -2147483648 to 2147483647  | 0          | Reference unit                | Unchangeable | <a href="#">"60BBh" on page 1025</a>       |
| 60BCh     | 60BCh      | Touch probe 2 positive edge position value | -2147483648 to 2147483647  | 0          | Reference unit                | Unchangeable | <a href="#">"60BCh" on page 1025</a>       |
| 60BDh     | 60BDh      | Touch probe 2 negative edge position value | -2147483648 to 2147483647  | 0          | Reference unit                | Unchangeable | <a href="#">"60BDh" on page 1025</a>       |
| 60C5h     | 60C5h      | Max. acceleration                          | 0 to 4294967295            | 4294967295 | Reference unit/s <sup>2</sup> | Real-time    | <a href="#">"60C5h" on page 1026</a>       |
| 60C6h     | 60C6h      | Max. deceleration                          | 0 to 4294967295            | 4294967295 | Reference unit/s <sup>2</sup> | Real-time    | <a href="#">"60C6h" on page 1026</a>       |
| 60D5h     | 60D5h      | Touch probe 1 positive edge counter        | 0–65535                    | 0          | -                             | Unchangeable | <a href="#">"60D5h" on page 1026</a>       |

| Parameter | Comm. Add. | Name                                | Value                      | Default | Unit             | Change Mode  | Page                                       |
|-----------|------------|-------------------------------------|----------------------------|---------|------------------|--------------|--------------------------------------------|
| 60D6h     | 60D6h      | Touch probe 1 negative edge counter | 0–65535                    | 0       | -                | Unchangeable | <a href="#">"60D6h" on page 1026</a>       |
| 60D7h     | 60D7h      | Touch probe 2 positive edge counter | 0–65535                    | 0       | -                | Unchangeable | <a href="#">"60D7h" on page 1027</a>       |
| 60D8h     | 60D8h      | Touch probe 2 negative edge counter | 0–65535                    | 0       | -                | Unchangeable | <a href="#">"60D8h" on page 1027</a>       |
| 60E0h     | 60E0h      | Positive torque limit               | 0–4000                     | 3000    | 0.001            | Real-time    | <a href="#">"60E0h" on page 1027</a>       |
| 60E1h     | 60E1h      | Negative torque limit               | 0–4000                     | 3000    | 0.001            | Real-time    | <a href="#">"60E1h" on page 1028</a>       |
| 60F4h     | 60F4h      | Position deviation                  | -2147483648 to 2147483647  | 0       | Reference unit   | Unchangeable | <a href="#">"60F4h" on page 1028</a>       |
| 60FCh     | 60FCh      | Position reference                  | -2147483648–2147483647     | 0       | -                | Unchangeable | <a href="#">"60FCh" on page 1028</a>       |
| 60FDh     | 60FDh      | DI state                            | 0–4294967295               | 0       | -                | Unchangeable | <a href="#">"60FDh" on page 1028</a>       |
| 60FFh     | 60FFh      | PV, CSV mode speed reference        | –2147483648 to +2147483647 | 0       | Reference unit/s | Real-time    | <a href="#">"60FFh" on page 1029</a>       |
| 60FE.01h  | 60FE-01h   | Physical output                     | 0–4294967295               | 0       | -                | Real-time    | <a href="#">"60FE_en.01h" on page 1030</a> |
| 60FE.02h  | 60FE-02h   | Bitmask                             | 0–4294967295               | 0       | -                | Real-time    | <a href="#">"60FE_en.02h" on page 1030</a> |

## 4 Description of Parameters [N]

### 4.1 H00 Servo Motor Parameters

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#### **Note**

For the EnDat2.2 or SSI encoder, see H34 for the related encoder parameters.

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|               |                     |          |                                        |
|---------------|---------------------|----------|----------------------------------------|
| <b>H00.00</b> | <b>Motor SN</b>     |          |                                        |
|               | Hex:                | 2000-01h | Effective mode: Upon the next power-on |
|               | Min.:               | 0        | Unit: -                                |
|               | Max.:               | 65535    | Data Type: UInt16                      |
|               | Default:            | 14102    | Change: At stop                        |
|               | <b>Value Range:</b> |          |                                        |

20000: linear motor-pulse encoder  
 14203: linear motor-BissC encoder  
 14206: linear motor-SSI encoder  
 14207: linear motor-Endat2.2 encoder  
 14202: linear motor-Inovance communication 23-bit encoder  
 14205: linear motor-Inovance interpolator 23-bit encoder  
 20001: DDR motor-pulse encoder  
 14210: DDR motor-Inovance interpolator 23-bit encoder  
 14201: DDR motor-Inovance communication 23-bit encoder  
 14211: DDR motor-BissC encoder  
 14212: DDR motor-Endat2.2 encoder  
 14213: DDR motor-SSI encoder  
 20002: rotary motor-pulse encoder  
 14000: rotary motor-Inovance communication 20-bit encoder  
 14101: rotary motor-Inovance communication 23-bit encoder  
 14102: rotary motor-Inovance communication 26-bit encoder  
 14020: rotary motor-Harmonic 20-bit encoder-2.5M baud rate-single turn  
 14021: rotary motor-Harmonic 17-bit encoder-2.5M baud rate-single turn  
 14022: rotary motor-Harmonic 17-bit encoder-4M baud rate-single turn  
 14120: rotary motor-Nikon 20-bit encoder-2.5M baud rate-multi-turn  
 14121: rotary motor-Nikon 17-bit encoder-2.5M baud rate-multi-turn  
 14122: rotary motor-Nikon 17-bit encoder-4M baud rate-multi-turn  
 14130: rotary motor-TAMAGAWA 17-bit encoder  
 14131: rotary motor-TAMAGAWA 23-bit encoder  
 14140: rotary motor-Endat2.2 encoder  
 14150: rotary motor-SSI encoder  
 14160: rotary motor-BISS-C encoder

**Description**

-

**H00.02****Customized No.**

|          |               |                 |              |
|----------|---------------|-----------------|--------------|
| Hex:     | 2000-03h      | Effective mode: | -            |
| Min.:    | 0.00          | Unit:           | -            |
| Max.:    | 4294967295.00 | Data Type:      | UInt32       |
| Default: | 0.00          | Change:         | Unchangeable |

**Value Range:**

0.00–4294967295.00

**Description**

Differentiates the customized MCU software version, which is not applicable to standard models.

**H00.04****Encoder version**

Hex: 2000-05h

Effective -

mode:

Min.: 0.0

Unit: -

Max.: 6553.5

Data Type: UInt16

Default: 0.0

Change: Unchangeable

**Value Range:**

0.0–6553.5

**Description**

Saved in the encoder and used to differentiate the encoder software version.

**H00.05****Serial-type motor code**

Hex: 2000-06h

Effective -

mode:

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: Unchangeable

**Value Range:**

0–65535

**Description**

Displays the code of the serial-type motor, which is determined by the motor model and unchangeable.

**H00.06****FPGA customized SN**

Hex: 2000-07h

Effective -

mode:

Min.: 0.00

Unit: -

Max.: 655.35

Data Type: UInt16

Default: 0.00

Change: Unchangeable

**Value Range:**

0.00–655.35

**Description**

Differentiates the customized FPGA software version, which is not applicable to standard models.

**H00.07****STO version**

Hex: 2000-08h

Effective -

mode:

Min.: 0.0

Unit: -

Max.: 6553.5

Data Type: UInt16

Default: 0.0

Change: Unchangeable

**Value Range:**

0.0–6553.5

**Description**

Display the software version number of STO function.

**H00.08****Bus encoder type**

Hex: 2000-09h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0–65535

**Description**

14100: Multi-turn absolute encoder

Others: Single-turn absolute encoder

**H00.14****Rated speed**

Hex: 2000-0Fh

Effective mode: Upon the next power-on

Min.: 50

Unit: [mm/s]/[rpm]

Max.: 10000

Data Type: UInt16

Default: 3000

Change: At stop

**Value Range:**

50[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H00.15****Maximum speed**

Hex: 2000-10h

Effective mode: Upon the next power-on

Min.: 50

Unit: [mm/s]/[rpm]

Max.: 10000

Data Type: UInt16

Default: 6000

Change: At stop

**Value Range:**

50[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H00.18****Stator resistance**

Hex: 2000-13h

Effective mode: Upon the next power-on

|          |        |            |          |
|----------|--------|------------|----------|
| Min.:    | 0.001  | Unit:      | $\Omega$ |
| Max.:    | 65.535 | Data Type: | UInt16   |
| Default: | 0.500  | Change:    | At stop  |

**Value Range:**

0.001 $\Omega$  to 65.535 $\Omega$

**Description**

-

**H00.19 Stator inductance Lq**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-14h | Effective mode: | Upon the next power-on |
| Min.:    | 0.01     | Unit:           | mH                     |
| Max.:    | 655.35   | Data Type:      | UInt16                 |
| Default: | 3.27     | Change:         | At stop                |

**Value Range:**

0.01mH–655.35mH

**Description**

-

**H00.20 Stator inductance Ld**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-15h | Effective mode: | Upon the next power-on |
| Min.:    | 0.01     | Unit:           | mH                     |
| Max.:    | 655.35   | Data Type:      | UInt16                 |
| Default: | 3.87     | Change:         | At stop                |

**Value Range:**

0.01mH–655.35mH

**Description**

-

**H00.22 Torque coefficient Kt**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-17h | Effective mode: | Upon the next power-on |
| Min.:    | 0.01     | Unit:           | [N/Arms]/[N·m/Arms]    |
| Max.:    | 655.35   | Data Type:      | UInt16                 |
| Default: | 0.51     | Change:         | At stop                |

**Value Range:**

0.01[N/Arms]/[N·m/Arms]–655.35[N/Arms]/[N·m/Arms]

**Description**

-

**H00.40****Motor control type**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-29h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 3        | Data Type:      | UInt16                 |
| Default: | 2        | Change:         | Real-time              |

**Value Range:**

0: General-purpose rotary motor (ROT)

1: Direct drive rotary motor (DDR)

2: Direct drive linear motor (DDL)

3: Voice coil motor (VOL)

**Description**

The motor type supported by the drive.

0: General-purpose rotary motor (ROT)

1: Direct drive rotary motor (DDR)

2: Direct drive linear motor (DDL)

3: Voice coil motor (VOL)

**H00.41****Master encoder configuration**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2000-2Ah | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 1        | Data Type:      | UInt16       |
| Default: | 1        | Change:         | Unchangeable |

**Value Range:**

0: CN2

1: CN7

**Description**

-

**H00.43****BiSS/SSI/ENDAT data length**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-2Ch | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 40       | Data Type:      | UInt16                 |
| Default: | 32       | Change:         | At stop                |

**Value Range:**

0–40

**Description**

Defines the length (up to 32 bits) of the data configured based on BiSS-C/SSI/ENDAT protocol.



**H00.44      Number of BiSS-C/SSI fault bits**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-2Dh | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 31       | Data Type:      | UInt16                 |
| Default: | 2        | Change:         | At stop                |

**Value Range:**

0–31

**Description**

Defines the length of the fault configured based on BiSS-C/SSI protocol.

**H00.45      Encoder pitch 1**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-2Eh | Effective mode: | Upon the next power-on |
| Min.:    | 0.01     | Unit:           | [mm]/[deg]             |
| Max.:    | 655.35   | Data Type:      | UInt16                 |
| Default: | 2.00     | Change:         | At stop                |

**Value Range:**

0.01[mm]/[deg]–655.35[mm]/[deg]

**Description**

Defines the encoder pitch characteristics, which should be used together with encoder pitch fluctuation suppressor 1 (see details in H08.90).

**H00.46      Encoder pitch 2**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-2Fh | Effective mode: | Upon the next power-on |
| Min.:    | 0.01     | Unit:           | [mm]/[deg]             |
| Max.:    | 655.35   | Data Type:      | UInt16                 |
| Default: | 0.50     | Change:         | At stop                |

**Value Range:**

0.01[mm]/[deg]–655.35[mm]/[deg]

**Description**

Defines the encoder pitch characteristics, which should be used together with encoder pitch fluctuation suppressor 2 (see details in H08.90).

**H00.47      Encoder Type**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2000-30h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Optical scale

1: Magnetic scale

**Description**

Pulse Encoder type:

0: Optical scale

1: Magnetic scale

**H00.48 Linear motor pole pitch (N-S)**

Hex: 2000-31h

Effective mode: Upon the next power-on

Min.: 0.00

Unit: mm

Max.: 655.35

Data Type: UInt16

Default: 16.00

Change: At stop

**Value Range:**

0.00 mm–655.35 mm

**Description**

Linear motor pole pitch.

**H00.49 Direct drive motor encoder resolution**

Hex: 2000-32h

Effective mode: Upon the next power-on

Min.: 0.000

Unit: um/p

Max.: 65.535

Data Type: UInt16

Default: 1.000

Change: At stop

**Value Range:**

0.000um/p–65.535um/p

**Description**

Direct drive motor encoder resolution.

**H00.54 BiSSC/SSI CRC**

Hex: 2000-37h

Effective mode: Upon the next power-on

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 1

Change: At stop

**Value Range:**

0–1

**Description**

Defines the CRC polarity of the BiSS-C/SSI protocol.

0: Positive

1: Negative

|              |                            |                                                   |                 |                        |
|--------------|----------------------------|---------------------------------------------------|-----------------|------------------------|
| H00.55       | Rated torque               |                                                   |                 |                        |
|              | Hex:                       | 2000-38h                                          | Effective mode: | Upon the next power-on |
|              | Min.:                      | 0.00                                              | Unit:           | [N]/[N·m]              |
|              | Max.:                      | 42949672.95                                       | Data Type:      | UInt32                 |
|              | Default:                   | 2.00                                              | Change:         | At stop                |
| Value Range: |                            | 0.00[N]/[N·m]–42949672.95[N]/[N·m]                |                 |                        |
| Description  |                            | -                                                 |                 |                        |
|              |                            |                                                   |                 |                        |
| H00.57       | Max. torque                |                                                   |                 |                        |
|              | Hex:                       | 2000-3Ah                                          | Effective mode: | Upon the next power-on |
|              | Min.:                      | 0.00                                              | Unit:           | [N]/[N·m]              |
|              | Max.:                      | 42949672.95                                       | Data Type:      | UInt32                 |
|              | Default:                   | 7.00                                              | Change:         | At stop                |
| Value Range: |                            | 0.00[N]/[N·m]–42949672.95[N]/[N·m]                |                 |                        |
| Description  |                            | -                                                 |                 |                        |
|              |                            |                                                   |                 |                        |
| H00.59       | Encoder counting direction |                                                   |                 |                        |
|              | Hex:                       | 2000-3Ch                                          | Effective mode: | Upon the next power-on |
|              | Min.:                      | 0                                                 | Unit:           | -                      |
|              | Max.:                      | 1                                                 | Data Type:      | UInt16                 |
|              | Default:                   | 0                                                 | Change:         | At stop                |
| Value Range: |                            | 0: Forward<br>1: Reverse                          |                 |                        |
| Description  |                            | Motor phase sequence:<br>0: Forward<br>1: Reverse |                 |                        |
|              |                            |                                                   |                 |                        |
| H00.63       | Maximum motor current      |                                                   |                 |                        |
|              | Hex:                       | 2000-40h                                          | Effective mode: | Upon the next power-on |
|              | Min.:                      | 0.00                                              | Unit:           | A                      |
|              | Max.:                      | 65535.00                                          | Data Type:      | UInt32                 |
|              | Default:                   | 3.00                                              | Change:         | At stop                |

**Value Range:**

0.00 A–65535.00 A

**Description**

-

**H00.65****Motor rated current**

Hex: 2000-42h

Effective mode: Upon the next power-on

Min.: 0.00

Unit: A

Max.: 65535.00

Data Type: UInt32

Default: 1.00

Change: At stop

**Value Range:**

0.00 A–65535.00 A

**Description**

-

**H00.67****Moment of inertia**

Hex: 2000-44h

Effective mode: Upon the next power-on

Min.: 0.00000

Unit: [g]/[0.00001kgcm<sup>2</sup>]

Max.: 42949.67295

Data Type: UInt32

Default: 0.00001

Change: At stop

**Value Range:**0.00000[g]/[0.00001kgcm<sup>2</sup>]-42949.67295[g]/[0.00001kgcm<sup>2</sup>]**Description**

-

**H00.69****Linear back EMF coefficient**

Hex: 2000-46h

Effective mode: Upon the next power-on

Min.: 0.00

Unit: [V/(m/s)]/[100mV/rpm]

Max.: 42949672.95

Data Type: UInt32

Default: 33.00

Change: At stop

**Value Range:**

0.00[V/(m/s)]/[100mV/rpm]-42949672.95[V/(m/s)]/[100mV/rpm]

**Description**

-

## 4.2 H01 Servo Drive Parameters

### H01.00 MCU software version

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2001-01h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0.0      | Unit:      | -            |
| Max.:    | 6553.5   | Data Type: | UInt16       |
| Default: | 0.0      | Change:    | Unchangeable |

**Value Range:**

0.0–6553.5

**Description**

Displays MCU software version (with one decimal place).

### H01.01 FPGA software version

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2001-02h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0.0      | Unit:      | -            |
| Max.:    | 6553.5   | Data Type: | UInt16       |
| Default: | 0.0      | Change:    | Unchangeable |

**Value Range:**

0.0–6553.5

**Description**

Displays the FPGA software version, with 1 decimal place.

### H01.02 Servo drive series No.

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2001-03h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

Display servo drive serial number, with 0 decimal place.

### H01.06 Board software version

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2001-07h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0.0      | Unit:      | -            |
| Max.:    | 6553.5   | Data Type: | UInt16       |
| Default: | 0.0      | Change:    | Unchangeable |

**Value Range:**

0.0–6553.5

**Description**

Displays board software version number, with 1 decimal place.

**H01.10****Drive series No.**

Hex: 2001-0Bh

Effective mode: Upon the next power-on

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 3

Change: At stop

**Value Range:**

2: S1R6

3: S2R8

5: S5R5

6: S7R6

7: S012

8: S018

9: S022

10: S027

10001: T3R5

10002: T5R4

10003: T8R4

10004: T012

10005: T017

10006: T021

10007: T026

**Description**

Displays the drive series number, with no decimal place.

**H01.11****DC-AC voltage class**

Hex: 2001-0Ch

Effective mode: -

Min.: 0

Unit: V

Max.: 65535

Data Type: UInt16

Default: 220

Change: Unchangeable

**Value Range:**

0 V–65535 V

**Description**

Display inverter voltage level, with 0 decimal place.

**H01.12 Drive rated power**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 2001-0Dh    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | 0.00        | Unit:      | kW           |
| Max.:    | 42949672.95 | Data Type: | UInt32       |
| Default: | 0.40        | Change:    | Unchangeable |

**Value Range:**

0.00 kW–42949672.95kW

**Description**

Display the rated power of the drive, with 2 decimal places.

**H01.14 Max. output power of the drive**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 2001-0Fh    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | 0.00        | Unit:      | kW           |
| Max.:    | 42949672.95 | Data Type: | UInt32       |
| Default: | 0.40        | Change:    | Unchangeable |

**Value Range:**

0.00 kW–42949672.95kW

**Description**

Displays the maximum output power of the drive, with 2 decimal places.

**H01.16 Rated output current of the drive**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 2001-11h    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | 0.00        | Unit:      | A            |
| Max.:    | 42949672.95 | Data Type: | UInt32       |
| Default: | 2.80        | Change:    | Unchangeable |

**Value Range:**

0.00 A–42949672.95 A

**Description**

Displays the rated output current of the drive, with 2 decimal places.

**H01.18 Max. output current of the drive**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 2001-13h    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | 0.00        | Unit:      | A            |
| Max.:    | 42949672.95 | Data Type: | UInt32       |
| Default: | 10.10       | Change:    | Unchangeable |

**Value Range:**

0.00 A–42949672.95 A

**Description**

Displays the maximum output current of the drive, with 2 decimal places.

**H01.40 DC bus overvoltage protection threshold**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2001-29h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | V         |
| Max.:    | 2000     | Data Type:      | UInt16    |
| Default: | 420      | Change:         | Real-time |

**Value Range:**

0 V–2000 V

**Description**

Displays DC bus overvoltage protection threshold, with 0 decimal place.

**H01.75 Current loop amplification factor**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2001-4Ch | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | -         |
| Max.:    | 655.35   | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | Real-time |

**Value Range:**

0.00–655.35

**Description**

Displays current loop amplification coefficient, with 2 decimal places.

**H01.88 Junction temperature parameter version 1**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2001-59h | Effective mode: | -            |
| Min.:    | 0.0      | Unit:           | -            |
| Max.:    | 6553.5   | Data Type:      | UInt16       |
| Default: | 0.0      | Change:         | Unchangeable |

**Value Range:**

0.0–6553.5

**Description**

Displays version 1 of the junction temperature parameter.

**H01.89 Junction temperature parameter version 2**

|       |          |                 |        |
|-------|----------|-----------------|--------|
| Hex:  | 2001-5Ah | Effective mode: | -      |
| Min.: | 0        | Unit:           | -      |
| Max.: | 65535    | Data Type:      | UInt16 |



|                                                           |   |         |              |
|-----------------------------------------------------------|---|---------|--------------|
| Default:                                                  | 0 | Change: | Unchangeable |
| <b>Value Range:</b>                                       |   |         |              |
| 0–65535                                                   |   |         |              |
| <b>Description</b>                                        |   |         |              |
| Displays version 2 of the junction temperature parameter. |   |         |              |

## 4.3 H02 Basic Control Parameters

H02.00

Control mode

Hex:2002-01h

Min.:0

Max.:9

Default:9

Value Range:

0: Velocity mode

1: Position mode

2: Torque mode

7: Technology segment

9: EtherCAT mode

Description

0: Velocity mode

1: Position mode

2: Torque mode

7: Technology segment

9: EtherCAT mode

Effective mode:

Unit:-

Data Type:UInt16

Change:At stop

Real time

H02.01

Absolute system selection

Hex:2002-02h

Min.:0

Max.:4

Default:0

Value Range:

0: Incremental mode

1: Absolute position linear mode

2: Absolute position rotation mode

3: Absolute position linear mode (without encoder overflow warning)

4: Absolute position single-turn mode

Description

Used to set the absolute position function.

Effective mode:

Unit:-

Data Type:UInt16

Change:At stop

Upon the next power-on

**H02.02      Rotation direction selection**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2002-03h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Counterclockwise (CCW) as forward direction

1: Clockwise (CW) as forward direction

**Description**

Defines the forward direction of the motor when viewed from the motor shaft side.

**H02.03      Output pulse phase**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2002-04h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Phase A leads phase B

1: Phase A lags behind phase B

**Description**

Defines the relationship between phase A and phase B on the condition that the motor direction of rotation remains unchanged when pulse output is enabled.

**H02.05      Stop mode at S-ON OFF**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-06h | Effective mode: | At stop   |
| Min.:    | -4       | Unit:           | -         |
| Max.:    | 2        | Data Type:      | Int16     |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

-4: Ramp to stop as defined by 6085h, keeping dynamic braking state

-3: at zero speed, keeping dynamic braking state

-2: Ramp to stop as defined by 6084h/609Ah (HM), keeping dynamic braking state

-1: Dynamic braking stop, keeping dynamic braking state

0: Coast to stop, keeping de-energized state

1: Ramp to stop as defined by 6084h/609Ah (HM), keeping de-energized state

2: Dynamic braking stop, keeping de-energized state

**Description**

Defines the deceleration mode of the motor for stopping rotating upon S-ON OFF and the motor status after stop.

Note: If the brake is enabled, H02.05 is forced to -4: Ramp to stop as defined by 6085h, keeping dynamic braking state.

### H02.06 Stop mode at No.2 fault

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-07h | Effective mode: | At stop   |
| Min.:    | -5       | Unit:           | -         |
| Max.:    | 4        | Data Type:      | Int16     |
| Default: | 2        | Change:         | Real-time |

#### Value Range:

- 5: Stop at zero speed, keeping dynamic braking state
- 4: Stop at emergency stop torque, keeping dynamic braking state
- 3: Ramp to stop as defined by 6085h, keeping dynamic braking state
- 2: Ramp to stop as defined by 6084h/ 609Ah (HM), keeping dynamic braking state
- 1: Dynamic braking stop, keeping dynamic braking state
- 0: Coast to stop, keeping de-energized state
- 1: Ramp to stop as defined by 6084h/ 609Ah (HM), keeping de-energized state
- 2: Ramp to stop as defined by 6085h, keeping de-energized state
- 3: Stop at emergency stop torque, keeping de-energized state
- 4: Dynamic braking stop, keeping de-energized state

#### Description

Defines the deceleration mode of the servo motor for stopping rotating and the servo motor status when a No. 2 fault occurs.

Note: If the brake is enabled, H02.06 is forced to -3: Ramp to stop as defined by 6085h, keeping dynamic braking state.

### H02.07 Stop mode at overtravel

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-08h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 7        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

#### Value Range:

- 0: Coast to stop, keeping de-energized state
- 1: Stop at zero speed, keeping position lock state
- 2: Stop at zero speed, keeping de-energized state
- 3: Stop based on ramp, keeping de-energized state
- 4: Stop based on ramp, keeping position lock state
- 5: Dynamic braking stop, keeping de-energized state
- 6: Dynamic braking stop, keeping dynamic braking state
- 7: Not responding to overtravel

**Description**

Defines the deceleration mode of the servo motor for stopping rotating and the servo motor status when overtravel occurs.

Note: When H02.07 is set to 7 (Not responding to overtravel), some PLC may stop sending position references to stop the drive.

Note: After the brake function is enabled, H02.07 will be forcibly set to "4: Ramp to stop as defined by 6085h, keeping position lock state".

**H02.08 Stop mode at No.1 fault**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-09h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 2        | Change:         | At stop   |

**Value Range:**

- 0: Coast to stop, keeping de-energized state
- 1: Dynamic braking stop, keeping de-energized state
- 2: Dynamic braking stop, keeping dynamic braking state

**Description**

Defines the deceleration mode of the servo motor for stopping rotating and the servo motor status when a No. 1 fault occurs.

Note: After the brake function is enabled, H02.08 will be forcibly set to "2: Dynamic braking stop, keeping dynamic braking state".

**H02.09 Delay from brake output ON to command received**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-0Ah | Effective mode: | At stop   |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 500      | Data Type:      | UInt16    |
| Default: | 250      | Change:         | Real-time |

**Value Range:**

0 ms to 500 ms

**Description**

Defines the delay from the moment the brake output signal is ON to the moment the servo drive starts to receive commands after power-on.

**H02.10 Delay from brake output OFF to motor de-energized**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-0Bh | Effective mode: | Real time |
| Min.:    | 50       | Unit:           | ms        |
| Max.:    | 1000     | Data Type:      | UInt16    |
| Default: | 150      | Change:         | Real-time |

**Value Range:**

50 ms to 1000 ms

**Description**

Defines the delay from the moment brake output is OFF to the moment when the motor at standstill enters the de-energized status.

**H02.11 Motor speed threshold at brake output OFF in rotation state**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2002-0Ch | Effective mode: | Real time    |
| Min.:    | 20       | Unit:           | [mm/s]/[rpm] |
| Max.:    | 3000     | Data Type:      | UInt16       |
| Default: | 30       | Change:         | Real-time    |

**Value Range:**

20[mm/s]/[rpm]–3000[mm/s]/[rpm]

**Description**

Defines the motor speed threshold when brake (BK) output is OFF in the rotating state.

**H02.12 Delay from S-ON OFF to brake output OFF in rotation state**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-0Dh | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 500      | Change:         | Real-time |

**Value Range:**

1 ms to 65535 ms

**Description**

Sets the delay time from BK OFF to S-ON OFF when the motor is in rotating state.

**H02.15 LED warning display**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2002-10h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 1        | Data Type: | UInt16    |
| Default: | 0        | Change:    | Real-time |

**Value Range:**

0: Output warning information immediately

1: Not output warning information

**Description**

Defines whether to switch the keypad to the fault display mode when a No. 3 fault occurs.

**H02.16 Brake enable switch**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2002-11h | Effective  | At stop   |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 1        | Data Type: | UInt16    |
| Default: | 0        | Change:    | Real-time |

**Value Range:**

0: OFF

1: ON

**Description**

Turn on or off the brake function.

**H02.17 Stop mode upon main circuit power failure**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2002-12h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 3        | Data Type: | UInt16    |
| Default: | 2        | Change:    | Real-time |

**Value Range:**

0: Keep current action

1: Stop upon fault as defined by H02.06

2: Stop at S-ON OFF as defined by H02.05

3: Stop quickly as defined by H02.18

**Description**

Defines the stop mode of the motor for stopping rotating upon main circuit power failure.

**H02.18****Quick stop mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-13h | Effective mode: | At stop   |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 7        | Data Type:      | UInt16    |
| Default: | 2        | Change:         | Real-time |

**Value Range:**

0: Coast to stop, keeping de-energized state

1: Ramp to stop as defined by 6084h/609Ah (HM), keeping de-energized state

2: Ramp to stop as defined by 6085h, keeping de-energized state

3: Stop at emergency stop torque, keeping de-energized state

5: Ramp to stop as defined by 6084h/609Ah (HM), keeping position lock state

6: Ramp to stop as defined by 6085h, keeping position lock state

7: Stop at emergency stop torque, keeping position lock state

**Description**

Defines the deceleration mode of the motor for stopping rotating upon quick stop and the motor status after stop.

Note: When the brake function is enabled and the value of H02.18 is lower than 4, the stop mode is forcibly set to "2: Ramp to stop as defined by 6085h, keeping de-energized state".

**H02.21****Permissible minimum resistance of regenerative resistor**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2002-16h | Effective mode: | -            |
| Min.:    | 1        | Unit:           | $\Omega$     |
| Max.:    | 1000     | Data Type:      | UInt16       |
| Default: | 40       | Change:         | Unchangeable |

**Value Range:**

1 $\Omega$  to 1000 $\Omega$

**Description**

-

**H02.22****Power of built-in regenerative resistor**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2002-17h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | W            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 50       | Change:         | Unchangeable |

**Value Range:**

0 W–65535W

**Description**

The power of the built-in regenerative resistor is only related to the servo drive model, which is unmodifiable.

**H02.23 Resistance of built-in regenerative resistor**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2002-18h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | $\Omega$     |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 50       | Change:         | Unchangeable |

**Value Range:**

0 $\Omega$  to 65535 $\Omega$

**Description**

The resistance of the built-in regenerative resistor is only related to the servo drive model, which is unmodifiable.

**H02.24 Resistor heat dissipation coefficient**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-19h | Effective mode: | Real time |
| Min.:    | 10       | Unit:           | %         |
| Max.:    | 100      | Data Type:      | UInt16    |
| Default: | 30       | Change:         | Real-time |

**Value Range:**

10% to 100%

**Description**

Defines the heat dissipation coefficient of the regenerative resistor, which is applicable to both external and built-in regenerative resistors.

Defines the heat dissipation coefficient of the regenerative resistor, which is applicable to both external and built-in regenerative resistors.

Set this parameter properly according to actual heat dissipation conditions of the resistor.

Recommendations:

Generally, the value of H02.24 cannot exceed 30% for natural cooling.

The value of H02.24 cannot exceed 50% for forced air cooling.

**H02.25 Regenerative resistor type**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-1Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 3        | Data Type:      | UInt16    |
| Default: | 3        | Change:         | Real-time |



**Value Range:**

- 0: Built-in
- 1: External, natural cooling
- 2: External, forced air cooling
- 3: No resistor needed

**Description**

Defines the resistor type and the mode of absorbing and releasing the braking energy.

**H02.26 Power of external regenerative resistor**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-1Bh | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | W         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 40       | Change:         | Real-time |

**Value Range:**

1 W–65535W

**Description**

Defines the power of external regenerative resistor.

**H02.27 Resistance of external regenerative resistor**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-1Ch | Effective mode: | Real time |
| Min.:    | 15       | Unit:           | $\Omega$  |
| Max.:    | 1000     | Data Type:      | UInt16    |
| Default: | 50       | Change:         | Real-time |

**Value Range:**

15 $\Omega$  to 1000 $\Omega$

**Description**

Defines the resistance of the external regenerative resistor.

**H02.28 Parameters Initialization**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-1Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

- 0: Parameters in group H02 and above initialized
- 1: Parameters in group H00, H02 and above initialized
- 2: All parameters initialized (default values used for model-related parameters)

**Description**

Settings of factory restore.

0: Parameters in group H02 and above initialized

1: Parameters in group H00, H02 and above initialized

2: All parameters initialized (default values used for model-related parameters)

**H02.30****User password**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-1Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

-

**H02.31****System parameter initialization**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-20h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: No operation

1: Restore default settings

2: Clear fault records

**Description**

Used to restore default values or clear fault records.

**H02.32****Selection of parameters in group H0b**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-21h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 99       | Data Type:      | UInt16    |
| Default: | 50       | Change:         | Real-time |

**Value Range:**

0–99

**Description**

Sets the offset of the parameter to be displayed on the operating panel.

For example, the setpoint 0 indicates the value of H0b.00 (Motor speed actual value) is displayed on the keypad.

The setpoint 1 indicates the value of H0b.01 is displayed on the operating panel.

**H02.35      Keypad data update frequency**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-24h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | Hz        |
| Max.:    | 20       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 Hz–20 Hz

**Description**

-

**H02.41      Manufacturer password**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-2Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

-

**H02.47      Delay time from power cable breakage to brake OFF**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2002-30h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 1000     | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms to 1000 ms

**Description**

Sets the delay time from power cable breakage to brake OFF.

## 4.4 H03 Terminal Input Parameters

### H03.02

#### DI1 function

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-03h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 59       | Data Type:      | UInt16    |
| Default: | 14       | Change:         | Real-time |

#### Value Range:

- 0: Undefined
- 1: Servo enabled
- 2: Alarm reset signal
- 5: Multi-run reference direction selection
- 6: Multi-run reference switching CMD1
- 7: Multi-run reference switching CMD2
- 8: Multi-run reference switching CMD3
- 9: Multi-run reference switching CMD4
- 14: Positive limit switch15: Negative limit switch
- 18: Forward jog
- 19: Reverse jog
- 24: Electronic gear selection
- 28: Multi-position reference enable
- 31: Home switch
- 34: Emergency stop
- 38: Probe 1
- 39: Probe 2
- 40: Multi-speed enable
- 46: Process segment enable
- 47: Process segment command switch 1
- 48: Process segment command switch 2
- 49: Process segment switch 3
- 50: Process segment switch 4
- 51: Event-triggered process segment 1
- 52: Event-triggered process segment 2
- 53: Event-triggered process segment 3
- 54: Event-triggered process segment 4
- 55: Process segment halt
- 56: Gantry torque alignment
- 57: Gantry DI alignment enable
- 58: Gantry DI alignment clear
- 59: Gantry synchronization enable

**Description**

Defines the function of DI1.

**H03.03**

**DI1 logic selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-04h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Normally open

1: Closed

**Description**

Used to set the level logic of DI1 when the function assigned to DI is active.

**H03.04**

**DI2 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-05h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 59       | Data Type:      | UInt16    |
| Default: | 15       | Change:         | Real-time |

**Value Range:**

Same as H03.02

**Description**

Defines the function of DI1.

**H03.05**

**DI2 logic selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-06h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Normally open

1: Closed

**Description**

-

**H03.06**

**DI3 function**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2003-07h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |    |            |           |
|----------|----|------------|-----------|
| Min.:    | 0  | Unit:      | -         |
| Max.:    | 59 | Data Type: | UInt16    |
| Default: | 31 | Change:    | Real-time |

**Value Range:**

Same as H03.02

**Description**

Defines the function of DI1.

**H03.07****DI3 logic selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-08h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Normally open

1: Closed

**Description**

-

**H03.08****DI4 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-09h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 59       | Data Type:      | UInt16    |
| Default: | 34       | Change:         | Real-time |

**Value Range:**

Same as H03.02

**Description**

Defines the function of DI1.

**H03.09****DI4 logic selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-0Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Normally open

1: Closed

**Description**

-

**H03.10 DI5 function**

Hex: 2003-0Bh

Effective mode: Real time

Min.: 0

Unit: -

Max.: 59

Data Type: UInt16

Default: 38

Change: Real-time

**Value Range:**

Same as H03.02

**Description**

Defines the function of DI1.

**H03.11 DI5 logic selection**

Hex: 2003-0Ch

Effective mode: Real time

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Normally open

1: Closed

**Description**

-

**H03.50 Voltage-type AI1 offset**

Hex: 2003-33h

Effective mode: Real time

Min.: -5000

Unit: mV

Max.: 5000

Data Type: Int16

Default: 0

Change: Real-time

**Value Range:**

-5000 mV–5000 mV

**Description**

Defines the actual AI1 input voltage when the drive sampling voltage is 0 after zero drift correction.

**H03.51 Voltage-type AI1 input filter time constant**

Hex: 2003-34h

Effective mode: Real time

Min.: 0.00

Unit: ms

Max.: 655.35

Data Type: UInt16

Default: 2.00

Change: Real-time

**Value Range:**

0.00 ms to 655.35 ms

### Description

It sets the filter time constant of voltage signal input from AI1.

Set this parameter properly to avoid motor reference fluctuation caused by unstable analog voltage input and reduce motor misoperation caused by interference signals.

The filter function cannot eliminate or suppress zero drift or dead zone.

## H03.53 Voltage-type AI1 dead zone

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-36h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | mV        |
| Max.:    | 1000.0   | Data Type:      | UInt16    |
| Default: | 10.0     | Change:         | Real-time |

### Value Range:

0.0 mV–1000.0 mV

### Description

Defines the AI1 input voltage range when the drive sampling voltage is 0.

## H03.54 Voltage-type AI1 zero drift

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-37h | Effective mode: | Real time |
| Min.:    | -500.0   | Unit:           | mV        |
| Max.:    | 500.0    | Data Type:      | Int16     |
| Default: | 0.0      | Change:         | Real-time |

### Value Range:

-500.0 mV–500.0 mV

### Description

Zero drift refers to the value of the drive o sampling voltage relative to GND upon zero AI voltage.

Set H0d.10 (Automatic adjustment of analog channels) to 1 (AI1 adjustment) to perform automatic adjustment on AI1 zero drift. The AI1 zero drift after adjustment will be saved into H03.54.

## H03.55 Voltage-type AI2 offset

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-38h | Effective mode: | Real time |
| Min.:    | -5000    | Unit:           | mV        |
| Max.:    | 5000     | Data Type:      | Int16     |
| Default: | 0        | Change:         | Real-time |

### Value Range:



-5000 mV–5000 mV

**Description**

Defines the actual AI2 input voltage when the drive sampling voltage is 0 after zero drift correction.

**H03.56 Voltage-type AI2 input filter time constant**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-39h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 655.35   | Data Type:      | UInt16    |
| Default: | 2.00     | Change:         | Real-time |

**Value Range:**

0.00 ms to 655.35 ms

**Description**

It sets the filter time constant of voltage signal input from AI2.

Set this parameter properly to avoid motor reference fluctuation caused by unstable analog voltage input and reduce motor misoperation caused by interference signals.

The filter function cannot eliminate or suppress zero drift or dead zone.

**H03.58 Voltage-type AI2 dead zone**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-3Bh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | mV        |
| Max.:    | 1000.0   | Data Type:      | UInt16    |
| Default: | 10.0     | Change:         | Real-time |

**Value Range:**

0.0 mV–1000.0 mV

**Description**

Defines the AI2 input voltage range when the drive sampling voltage is 0.

**H03.59 Voltage-type AI2 zero drift**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-3Ch | Effective mode: | Real time |
| Min.:    | -500.0   | Unit:           | mV        |
| Max.:    | 500.0    | Data Type:      | Int16     |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

-500.0 mV–500.0 mV

**Description**

Zero drift refers to the value of the drive o sampling voltage relative to GND upon zero AI voltage.

Set H0d.10 (Automatic adjustment of analog channels) to 1 (AI2 adjustment) to perform automatic adjustment on AI2 zero drift. The AI1 zero drift after adjustment will be saved into H03.59.

**H03.60****DI1 filter time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-3Dh | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 500.00   | Data Type:      | UInt16    |
| Default: | 3.00     | Change:         | Real-time |

**Value Range:**

0.00 ms to 500.00 ms

**Description**

Defines the filter time of DI1. The DI function is active only after the effective level is kept within the time defined by H03.60.

**H03.61****DI2 filter time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-3Eh | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 500.00   | Data Type:      | UInt16    |
| Default: | 3.00     | Change:         | Real-time |

**Value Range:**

0.00 ms to 500.00 ms

**Description**

Defines the filter time of DI2. The DI function is active only after the effective level is kept within the time defined by H03.61.

**H03.62****DI3 filter time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-3Fh | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 500.00   | Data Type:      | UInt16    |
| Default: | 3.00     | Change:         | Real-time |

**Value Range:**

0.00 ms to 500.00 ms

**Description**

Defines the filter time of DI3. The DI function is active only after the effective level is kept within the time defined by H03.62.

**H03.63****DI4 filter time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-40h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 500.00   | Data Type:      | UInt16    |
| Default: | 3.00     | Change:         | Real-time |

**Value Range:**

0.00 ms to 500.00 ms

**Description**

Defines the filter time of DI4. The DI function is active only after the effective level is kept within the time defined by H03.63.

**H03.64****DI5 filter time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2003-41h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 500.00   | Data Type:      | UInt16    |
| Default: | 3.00     | Change:         | Real-time |

**Value Range:**

0.00 ms to 500.00 ms

**Description**

Defines the filter time of DI5. The DI function is active only after the effective level is kept within the time defined by H03.64.

**H03.80****Speed corresponding to analog 10 V**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2003-51h | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 3000     | Change:         | At stop      |

**Value Range:**

0[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the corresponding motor speed when the sampling voltage is 10 V.  
Speed reference value = Sampling voltage/10 x H03.80

**H03.81****Torque corresponding to analog 10 V**

|       |          |                 |            |
|-------|----------|-----------------|------------|
| Hex:  | 2003-52h | Effective mode: | Real time  |
| Min.: | 0.00     | Unit:           | Multiplier |
| Max.: | 8.00     | Data Type:      | UInt16     |

Default: 1.00

Change: At stop

**Value Range:**

0.00 to 8.00

**Description**

Defines the motor torque corresponding to a sampling voltage of 10 V.

Torque reference value = Sampling voltage/10 × H03.81

## 4.5 H04 Terminal Output Parameters

### H04.00 DO1 function selection

Hex: 2004-01h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 33

Data Type: UInt16

Default: 1

Change: Real-time

**Value Range:**

0: Undefined

1: Servo ready

2: Motor rotation signal

9: Braking

10: Warning

11: Failure

25: Comparison output DO

26: Closed-loop state

27: Left limit

28: Right limit

31: Forced communication DO

32: EDM output

33: Gantry alignment

**Description**

Defines the function of DO1.

### H04.01 DO1 logic selection

Hex: 2004-02h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Normally open

1: Closed

**Description**

Defines the level logic of DO1 when the function assigned to DO is active.

**H04.02****DO2 function**

Hex: 2004-03h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 33

Data Type: UInt16

Default: 11

Change: Real-time

**Value Range:**

Same as H04.00

**Description**

Defines the function of DO2.

**H04.03****DO2 logic selection**

Hex: 2004-04h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Normally open

1: Closed

**Description**

Defines the level logic of DO2 when the function assigned to DO is active.

**H04.22****DO source selection**

Hex: 2004-17h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 3

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

| bit | Name              | Description                                  |
|-----|-------------------|----------------------------------------------|
| 0   | DO1 output source | 0: DO1 function output                       |
|     |                   | 1: Bit 0 of H31.04 set through communication |
| 1   | DO2 output source | 0: DO2 function output                       |
|     |                   | 1: Bit 1 of H31.04 set through communication |

**Description**

Defines whether the logic of a physical DO terminal is defined by the actual state of the drive or by communication.

**H04.23 ECAT communication-forced DO logic in non-OP status**

Hex: 2004-18h Effective mode: Real time  
 mode:  
 Min.: 0 Unit: -  
 Max.: 3 Data Type: UInt16  
 Default: 0 Change: Real-time

**Value Range:**

| bit | Name | Description         |
|-----|------|---------------------|
| 0   | DO1  | 0: Status unchanged |
|     |      | 1: No output        |
| 1   | DO2  | 0: Status unchanged |
|     |      | 1: No output        |

**Description**

Sets DO state upon ECAT communication failure.

**H04.24 DO brake enable**

Hex: 2004-19h Effective mode: Real time  
 mode:  
 Min.: 0 Unit: -  
 Max.: 1 Data Type: UInt16  
 Default: 0 Change: At stop

**Value Range:**

0: Disabled

1: Enable

**Description**

0: You can only control the motor brake through the built-in brake even if the DO brake function is available.

1: The DO brake function must be available.

Note: Functional safety models cannot use this feature.

**H04.50 AO1 signal selection**

Hex: 2004-33h Effective mode: Real time  
 mode:  
 Min.: 0 Unit: -  
 Max.: 10 Data Type: UInt16  
 Default: 0 Change: Real-time

**Value Range:**

- 0: Motor speed (1 V/1000 [mm/s]/[rpm])
- 1: Speed reference (1 V/1000 [mm/s]/[rpm])
- 2: Torque reference (1 V/100 x rated torque)
- 3: Position deviation (0.5 mV/1 reference unit)
- 4: Position deviation (0.5 mV/1 encoder unit)
- 5: Position reference speed (1 V/1000 [mm/s]/[rpm])
- 6: Positioning completed
- 8: AI1 voltage
- 9: AI2 voltage
- 10: Defined by H31.05

**Description**

Defines the physical value source of AO1.

**H04.51**

**AO1 offset voltage**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2004-34h | Effective mode: | Real time |
| Min.:    | -10000   | Unit:           | mV        |
| Max.:    | 10000    | Data Type:      | Int16     |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

-10000 mV–10000 mV

**Description**

Defines the actual AO1 output voltage after offset when the output voltage is 0 V in theory.

**H04.52**

**AO1 ratio**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2004-35h | Effective mode: | Real time |
| Min.:    | -99.99   | Unit:           | -         |
| Max.:    | 99.99    | Data Type:      | Int16     |
| Default: | 1.00     | Change:         | Real-time |

**Value Range:**

-99.99–99.99

**Description**

Defines the actual AO1 output voltage after amplification when the output voltage is 1V in theory.

## 4.6 H05 Position Control Parameters

### H05.00 Primary position reference source

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-01h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 2        | Change:         | Real-time |

#### Value Range:

2: Multi-position reference

#### Description

Defines the position reference source in position control mode.

### H05.02 Pulses per revolution

|          |            |                 |                        |
|----------|------------|-----------------|------------------------|
| Hex:     | 2005-03h   | Effective mode: | Upon the next power-on |
| Min.:    | 0          | Unit:           | [P/N-N]/[P/Rev]        |
| Max.:    | 4294967295 | Data Type:      | UInt32                 |
| Default: | 0          | Change:         | At stop                |

#### Value Range:

0–4294967295

#### Description

Defines the number of pulses required per revolution of the motor.

### H05.04 First-order low-pass filter time constant

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-05h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | ms        |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | At stop   |

#### Value Range:

0.0 ms to 6553.5 ms

#### Description

Defines the first-order low pass filter time constant of position references.

### H05.06 Moving average filter time constant 1

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-07h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | ms        |
| Max.:    | 128.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | At stop   |



**Value Range:**

0.0 ms to 128.0 ms

**Description**

Defines the moving average filter time constant of position references.

**H05.07      Electronic gear ratio 1 (numerator)**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2005-08h   | Effective mode: | Real time |
| Min.:    | 1          | Unit:           | -         |
| Max.:    | 1073741824 | Data Type:      | UInt32    |
| Default: | 1          | Change:         | Real-time |

**Value Range:**

1–1073741824

**Description**

Defines the numerator of electronic gear ratio 1.

**H05.09      Electronic gear ratio 1 (denominator)**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2005-0Ah   | Effective mode: | Real time |
| Min.:    | 1          | Unit:           | -         |
| Max.:    | 1073741824 | Data Type:      | UInt32    |
| Default: | 1          | Change:         | Real-time |

**Value Range:**

1–1073741824

**Description**

Defines the denominator of electronic gear ratio 1.

**H05.11      Electronic gear ratio 2 (numerator)**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2005-0Ch   | Effective mode: | Real time |
| Min.:    | 1          | Unit:           | -         |
| Max.:    | 1073741824 | Data Type:      | UInt32    |
| Default: | 1          | Change:         | Real-time |

**Value Range:**

1–1073741824

**Description**

Defines the numerator of electronic gear ratio 2.

**H05.13      Electronic gear ratio 2 (denominator)**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2005-0Eh | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |            |            |           |
|----------|------------|------------|-----------|
| Min.:    | 1          | Unit:      | -         |
| Max.:    | 1073741824 | Data Type: | UInt32    |
| Default: | 1          | Change:    | Real-time |

**Value Range:**

1–1073741824

**Description**

Defines the denominator of electronic gear ratio 2.

**H05.16****Clear action**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-11h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Position deviation cleared upon S-OFF or fault

1: Position deviation cleared upon S-OFF or fault

2: Position deviation cleared upon non-operational state or active DI function 35

**Description**

Defines the condition for clearing the position deviation.

**H05.17****Number of encoder frequency-division pulses**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2005-12h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | [P/N-N]/[P/Rev]        |
| Max.:    | 4194303  | Data Type:      | UInt32                 |
| Default: | 2500     | Change:         | At stop                |

**Value Range:**

0–4194303

**Description**

Defines the number of pulses output by PAO or PBO per revolution.

Pulse output resolution per revolution = (H05.17) x 4

**H05.19****Speed feedforward control**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-14h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 3        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

- 0: No speed feedforward
- 1: Internal speed feedforward
- 2: H05.72
- 3: Zero phase

**Description**

Defines the source of the speed loop feedforward signal.  
When the external speed feedforward is set, the feedforward source is set by H05.72.

**H05.21      Threshold of positioning completed**

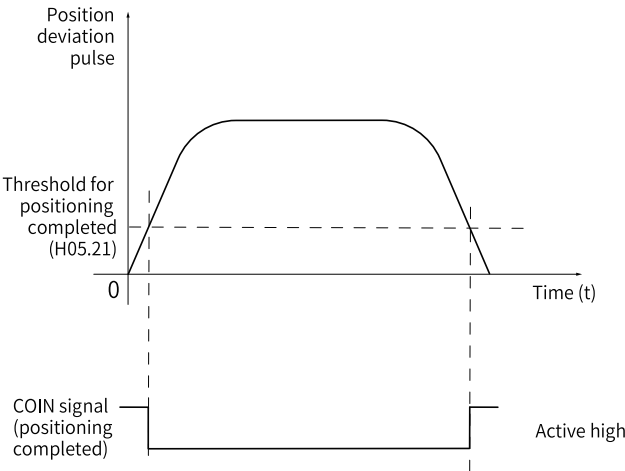
|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2005-16h | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | Encoder unit |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 46976    | Change:         | Real-time    |

**Value Range:**

1 to 65535

**Description**

Defines the threshold of the absolute value of position deviation when the drive outputs the positioning completed signal.  
Positioning completed signal: DO function 5 (FunOUT.5: COIN).



The positioning completed signal is valid only when the servo drive is in running state and in position control.

**H05.22 Proximity threshold**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2005-17h | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | Encoder unit |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 65535    | Change:         | Real-time    |

**Value Range:**

1 to 65535

**Description**

Defines the threshold of the absolute value of position deviation when the drive outputs the proximity signal.

**H05.30 Homing enable selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-1Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 6        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disabled 6: Current position as home

**Description**

Defines the homing mode and the trigger signal source.

**H05.35 Home search time limit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-24h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10000    | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Defines the maximum homing time.

**H05.36 Mechanical home offset**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2005-25h    | Effective mode: | Real time      |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | 0           | Change:         | Real-time      |

**Value Range:**

-2147483648 to 2147483647

**Description**

Defines the absolute position of the motor after homing.

**H05.38 Frequency-division output source**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2005-27h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 4        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | Real-time              |

**Value Range:**

- 0: Encoder frequency-division output
- 2: Frequency-division output inhibited
- 3: Second encoder frequency-division output
- 4: H31-01 reference frequency output

**Description**

Defines the output source of the pulse output terminal.

**H05.39 Electronic gear ratio switchover condition**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-28h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

- 0: Switchover after position reference is kept 0 for 2.5 ms
- 1: Switched in real time

**Description**

Defines the condition for switching the electronic gear ratio. After the fully closed-loop function is enabled and H0F.00 is set to 2, the setpoint is forcibly set to 0.

When its value is 0: when H0F.00 = 2, the switching condition is that the position command is 0 and positioning is completed and lasts for 2.5 ms; when H0F.00 is not 2, the switching condition is that the position command keeps at 0 for 2.5 ms.

**H05.40 Mechanical home offset and action upon overtravel**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2005-29h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 3        | Data Type:      | UInt16    |

Default: 0

Change: Real-time

**Value Range:**

0: H05.36 as the coordinate after homing, reverse homing applied after homing triggered again on overtravel

1: H05.36 as the relative offset after homing, reverse homing applied after homing triggered again on overtravel

2: H05.36 as the coordinate after homing, reverse homing auto-applied on overtravel

3: H05.36 as the relative offset after homing, reverse homing auto-applied on overtravel

**Description**

Defines the offset relationship between the mechanical home and mechanical zero point, and the action upon overtravel during homing.

**H05.41 Z pulse output polarity**

Hex: 2005-2Ah

Effective mode: Upon the next power-on

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 1

Change: At stop

**Value Range:**

| bit | Name                                 | Description                                  |
|-----|--------------------------------------|----------------------------------------------|
| 0   | Frequency-division Z output polarity | 0: Positive (high level upon active Z pulse) |
|     |                                      | 1: Negative (low level upon active Z pulse)  |
| 1   | OCZ output polarity                  | 0: Positive (high level upon active Z pulse) |
|     |                                      | 1: Negative (low level upon active Z pulse)  |
| 2   | Inner loop probe Z signal source     | 0: Motor Z signal                            |
|     |                                      | 1: Frequency-division output Z signal        |

**Description**

Defines the output level when the Z pulse of pulse output terminal is active.

**H05.44 Numerator of frequency-division output reduction ratio**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-2Dh | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 16383    | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

1–16383

**Description**

Defines the numerator of frequency-division output reduction ratio.

**H05.45 Denominator of frequency-division output reduction ratio**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-2Eh | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 8191     | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

1–8191

**Description**

Defines the denominator of frequency-division output reduction ratio.

**H05.46 DI selection of multi-turn frequency-division Z starting point**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2005-2Fh | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 5        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | Real-time              |

**Value Range:**

0: No operation

1: DI1

2: DI2

3: DI3

4: DI4

5: DI5

**Description**

Sets the start point for frequency-division output. It is only effective when the frequency division ratio is greater than 1.

**H05.47 Frequency-division Z pulse width**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2005-30h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |     |            |           |
|----------|-----|------------|-----------|
| Min.:    | 0   | Unit:      | us        |
| Max.:    | 400 | Data Type: | UInt16    |
| Default: | 0   | Change:    | Real-time |

**Value Range:**

0us to 400us

**Description**

Defines the minimum output width (us) of frequency-division output PZ. When the pulse signal is used as master encoder and fully closed-loop encoder, the setpoint 0 indicates the original Z signal will be outputted. Other setpoints indicate the frequency-division Z signal will be output.

**H05.48 Frequency-division output dead zone setting threshold**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-31h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 255      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–255

**Description**

Defines the dead zone threshold of frequency-division output to prevent frequency-division output caused by encoder jitter.

**H05.50 Mechanical gear ratio in absolute position rotation mode (numerator)**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-33h | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

1–65535

**Description**

Defines the transmission ratio between the mechanical rotary load and the motor in the absolute position rotation mode.

**H05.51 Mechanical gear ratio in absolute position rotation mode (denominator)**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-34h | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |



**Value Range:**

1–65535

**Description**

Defines the transmission ratio between the mechanical rotary load and the motor in the absolute position rotation mode.

**H05.52      Pulses per revolution of the load in absolute position rotation mode (low 32 bits)**

|          |            |                 |              |
|----------|------------|-----------------|--------------|
| Hex:     | 2005-35h   | Effective mode: | Real time    |
| Min.:    | 0          | Unit:           | Encoder unit |
| Max.:    | 4294967295 | Data Type:      | UInt32       |
| Default: | 0          | Change:         | At stop      |

**Value Range:**

0 to 4294967295

**Description**

Defines the number of pulses per revolution of the rotary load in the absolute position rotation mode.

**H05.54      Pulses per revolution of the load in absolute position rotation mode (high 32 bits)**

|          |            |                 |              |
|----------|------------|-----------------|--------------|
| Hex:     | 2005-37h   | Effective mode: | Real time    |
| Min.:    | 0          | Unit:           | Encoder unit |
| Max.:    | 4294967295 | Data Type:      | UInt32       |
| Default: | 0          | Change:         | At stop      |

**Value Range:**

0 to 4294967295

**Description**

Defines the number of pulses per revolution of the rotary load in the absolute position rotation mode.

**H05.58      Torque threshold in homing upon hit-and-stop**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-3Bh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 400.0    | Data Type:      | UInt16    |
| Default: | 100.0    | Change:         | Real-time |

**Value Range:**

0.0% to 400.0%

### Description

Defines the maximum positive/negative torque limit in homing upon hit-and-stop.

### H05.60

### Hold time of positioning completed

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-3Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 30000    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

### Value Range:

0 ms to 30000 ms

### Description

Defines the hold time of an active positioning completed signal.

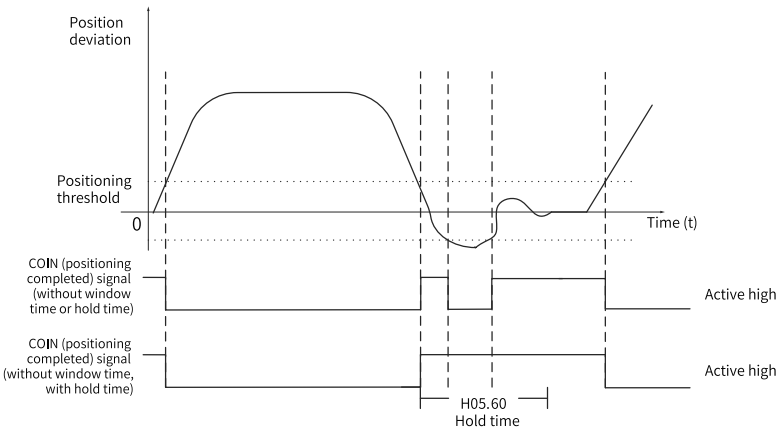


Figure 4-1 Schematic diagram for the window time (H05.59) and hold time (H05.60) of positioning completed signal

When the COIN (positioning completed) signal has a hold time of 0, it remains active until the next position reference is received.

### H05.66

### Homing time unit

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2005-43h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 2        | Change:         | At stop   |

**Value Range:**

0: 1 ms

1: 10 ms

2: 100 ms

**Description**

Defines the homing time unit. The actual timeout time is H05.35 x H05.66 ms.

**H05.67      Offset between zero point and single-turn absolute position**

Hex:            2005-44h

Effective      Real time

mode:

Min.:           -2147483648

Unit:           Encoder unit

Max.:           2147483647

Data Type:   Int32

Default:       0

Change:       At stop

**Value Range:**

-2147483648 to 2147483647

**Description**

-

**H05.71      Motor Z signal width**

Hex:            2005-48h

Effective      Real time

mode:

Min.:           1

Unit:           ms

Max.:           100

Data Type:   UInt16

Default:       4

Change:       Real-time

**Value Range:**

1 ms to 100 ms

**Description**

Output pulse width when motor Z signal is active.

**H05.72      External speed feedforward source selection**

Hex:            2005-49h

Effective      Real time

mode:

Min.:           0

Unit:           -

Max.:           2

Data Type:   UInt16

Default:       0

Change:       Real-time

**Value Range:**

0: 60B1

1: AI1

2: AI2

**Description**

External speed feedforward source selection

## 4.7 H06 Speed Control Parameters

### H06.00 Source of main speed reference A

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-01h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

#### Value Range:

0: Digital setting (H06.03)

1: AI1

2: AI2

#### Description

Defines the source of main speed reference A.

### H06.01 Source of auxiliary speed reference B

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-02h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 5        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

#### Value Range:

0: Digital setting (H06.03)

1: AI1

2: AI2

5: Multi-speed reference

#### Description

Defines the source of auxiliary speed reference B.

### H06.02 Speed reference source

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-03h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 4        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

#### Value Range:

0: Source of main speed reference A

1: Source of auxiliary speed reference B

2: A+B

3: Switched between A and B

4: Communication

**Description**

Defines the source of speed references.

**H06.03 Speed reference set through keypad**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2006-04h | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | 200      | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the speed reference value set through the keypad.

**H06.04 DI jog speed reference**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2006-05h | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | 150      | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the DI jog speed reference.

**H06.05 Acc. ramp time of speed reference**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-06h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Sets acceleration ramp time of speed reference. The acceleration/deceleration time constant of multi-speed references are defined only by parameters in group H12.

H06.05 defines the time for the speed reference to change from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm].

H06.06 defines the time for the speed reference to change from 1000 [mm/s]/[rpm] to 0 [mm/s]/[rpm].

The formulas for calculating the actual acceleration/deceleration time are as follows:

Actual acceleration time  $t_1 = \text{Speed reference} \div 1000 \times \text{Acceleration ramp time of speed reference}$

Actual deceleration time  $t_2 = \text{Speed reference} \div 1000 \times \text{Deceleration ramp time of speed reference}$

#### H06.06 Dec. ramp time of speed reference

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-07h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

##### **Value Range:**

0 ms to 65535 ms

##### **Description**

Sets deceleration ramp time of speed reference.

#### H06.07 Maximum speed limit

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2006-08h | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 7000     | Change:         | Real-time    |

##### **Value Range:**

0[mm/s]/[rpm]–10000[mm/s]/[rpm]

##### **Description**

Defines the maximum speed limit.

#### H06.08 Forward speed threshold

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2006-09h | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 7000     | Change:         | Real-time    |

##### **Value Range:**

0[mm/s]/[rpm]–10000[mm/s]/[rpm]

##### **Description**

Defines the forward speed threshold.

**H06.09 Reverse speed threshold**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2006-0Ah | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 7000     | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the reverse speed threshold.

**H06.10 Deceleration unit in emergency stop**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-0Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Multiplied by 1

1: Multiplied by 10

2: Multiplied by 100

**Description**

Sets the deceleration unit in emergency stop.

**H06.11 Torque feedforward control**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-0Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

0: No torque feedforward

1: Internal torque feedforward

2: 60B2h as external torque feedforward

**Description**

Defines the source for torque feedforward control.

**H06.12 Acceleration ramp time of jog speed**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2006-0Dh | Effective mode: | Real time |
| Min.: | 0        | Unit:           | ms        |

|          |       |            |           |
|----------|-------|------------|-----------|
| Max.:    | 65535 | Data Type: | UInt16    |
| Default: | 10    | Change:    | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Sets the acceleration ramp time of jog speed.

**H06.13 Speed feedforward smoothing filter**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-0Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | us        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 us to 65535 us

**Description**

Defines the speed feedforward smoothing filter time.

**H06.15 Zero clamp speed threshold**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2006-10h | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 10       | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the zero clamp speed threshold.

**H06.16 Threshold of TGON (motor rotation) signal**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2006-11h | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 1000     | Data Type:      | UInt16       |
| Default: | 20       | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–1000[mm/s]/[rpm]

**Description**

Sets the threshold of TGON (motor rotation) signal.



**H06.17 Threshold of V-Cmp (speed matching) signal**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2006-12h | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 100      | Data Type:      | UInt16       |
| Default: | 10       | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–100[mm/s]/[rpm]

**Description**

Defines the threshold of speed match signal.

**H06.18 Threshold of speed reach signal**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2006-13h | Effective mode: | Real time    |
| Min.:    | 20       | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 1000     | Change:         | Real-time    |

**Value Range:**

20[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the threshold of speed reached signal.

**H06.19 Threshold of zero speed output signal**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2006-14h | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 10       | Change:         | Real-time    |

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the threshold of zero speed output signal.

**H06.50 Speed S-curve enable switch**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-33h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

0: Disabled

1: Enabled

**Description**

0: Accelerate/Decelerate at fixed acceleration rate

1: Accelerate/Decelerate based on the S-curve

**H06.51 Increasing acceleration of speed S-curve acceleration segment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-34h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 50.0     | Change:         | At stop   |

**Value Range:**

0.0% to 100.0%

**Description**

-

**H06.52 Decreasing acceleration of speed S-curve acceleration segment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-35h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 50.0     | Change:         | At stop   |

**Value Range:**

0.0% to 100.0%

**Description**

-

**H06.53 Decreasing deceleration of speed S-curve deceleration segment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2006-36h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 50.0     | Change:         | At stop   |

**Value Range:**

0.0% to 100.0%

**Description**

-

**H06.54 Decreasing acceleration of speed S-curve deceleration segment**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2006-37h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|                     |       |            |         |
|---------------------|-------|------------|---------|
| Min.:               | 0.0   | Unit:      | %       |
| Max.:               | 100.0 | Data Type: | UInt16  |
| Default:            | 50.0  | Change:    | At stop |
| <b>Value Range:</b> |       |            |         |
| 0.0% to 100.0%      |       |            |         |
| <b>Description</b>  |       |            |         |
| -                   |       |            |         |

## 4.8 H07 Torque Control Parameters

### H07.00 Source of main torque reference A

|                                                    |          |                 |           |
|----------------------------------------------------|----------|-----------------|-----------|
| Hex:                                               | 2007-01h | Effective mode: | Real time |
| Min.:                                              | 0        | Unit:           | -         |
| Max.:                                              | 2        | Data Type:      | UInt16    |
| Default:                                           | 0        | Change:         | At stop   |
| <b>Value Range:</b>                                |          |                 |           |
| 0: Keypad (H07.03)                                 |          |                 |           |
| 1: AI1                                             |          |                 |           |
| 2: AI2                                             |          |                 |           |
| <b>Description</b>                                 |          |                 |           |
| Defines the source of the main torque reference A. |          |                 |           |

### H07.01 Source of auxiliary torque reference B

|                                                    |          |                 |           |
|----------------------------------------------------|----------|-----------------|-----------|
| Hex:                                               | 2007-02h | Effective mode: | Real time |
| Min.:                                              | 0        | Unit:           | -         |
| Max.:                                              | 2        | Data Type:      | UInt16    |
| Default:                                           | 1        | Change:         | At stop   |
| <b>Value Range:</b>                                |          |                 |           |
| 0: Keypad (H07.03)                                 |          |                 |           |
| 1: AI1                                             |          |                 |           |
| 2: AI2                                             |          |                 |           |
| <b>Description</b>                                 |          |                 |           |
| Defines the source of auxiliary torque references. |          |                 |           |

### H07.02 Torque reference source

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2007-03h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |

|          |   |            |         |
|----------|---|------------|---------|
| Max.:    | 4 | Data Type: | UInt16  |
| Default: | 0 | Change:    | At stop |

**Value Range:**

0: Source of main torque reference A  
 1: Source of auxiliary torque reference B  
 2: Source of A+B  
 3: Switched between A and B  
 4: Communication

**Description**

Selects the source of torque references.

**H07.03 Torque reference set through keypad**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-04h | Effective mode: | Real time |
| Min.:    | -400.0   | Unit:           | %         |
| Max.:    | 400.0    | Data Type:      | Int16     |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

-400.0% to 400.0%

**Description**

Defines the torque reference value that set through the keypad.

**H07.05 Torque reference filter time constant 1**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-06h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 30.00    | Data Type:      | UInt16    |
| Default: | 0.50     | Change:         | Real-time |

**Value Range:**

0.00 ms to 30.00 ms

**Description**

Defines torque reference source of torque reference filter.

**H07.06 Torque reference filter time constant 2**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-07h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 30.00    | Data Type:      | UInt16    |
| Default: | 0.27     | Change:         | Real-time |

**Value Range:**

0.00 ms to 30.00 ms

**Description**

Defines torque reference source of torque reference filter.

**H07.07****Torque Limit source**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-08h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 4        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Positive/Negative internal torque limit

1: Internal or external limit as defined by DI

2: T\_LMT

3: T\_LMT or external limit as defined by DI (FunIN.16 or FunIN.17)

4: T\_LMT or internal limit (FunIN.16 or FunIN.17) as defined by DI

**Description**

Defines the torque reference source of torque limit source.

**H07.08****T-LMT selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-09h | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

1: AI1

2: AI2

**Description**

Sets the AI as the torque limit source.

**H07.09****Positive internal torque limit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-0Ah | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 400.0    | Data Type:      | UInt16    |
| Default: | 350.0    | Change:         | Real-time |

**Value Range:**

0.0% to 400.0%

**Description**

Defines the torque reference source of positive internal torque.

**H07.10 Negative internal torque limit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-0Bh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 400.0    | Data Type:      | UInt16    |
| Default: | 350.0    | Change:         | Real-time |

**Value Range:**

0.0% to 400.0%

**Description**

Defines the torque reference source of negative internal torque.

**H07.11 Positive external torque limit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-0Ch | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 400.0    | Data Type:      | UInt16    |
| Default: | 350.0    | Change:         | Real-time |

**Value Range:**

0.0% to 400.0%

**Description**

Defines the torque reference source of positive external torque limit.

**H07.12 Negative external torque limit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-0Dh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 400.0    | Data Type:      | UInt16    |
| Default: | 350.0    | Change:         | Real-time |

**Value Range:**

0.0% to 400.0%

**Description**

Defines the torque reference source of negative external torque limit.

**H07.15 Emergency-stop torque**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-10h | Effective mode: | At stop   |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 400.0    | Data Type:      | UInt16    |
| Default: | 100.0    | Change:         | Real-time |

**Value Range:**

0.0% to 400.0%

**Description**

Set torque command source for emergency stop.

**H07.17****Speed limit source**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-12h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Internal speed limit

1: V-LMT

2: H07.19 or H07.20 as defined by DI

**Description**

Defines the speed reference source of speed limit source.

**H07.18****V-LMT selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-13h | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

1: AI1

2: AI2

**Description**

Sets the AI as the speed limit source.

**H07.19****Positive speed limit/Speed limit 1 in torque control**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2007-14h | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 3000     | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the positive torque reference source in torque control.

**H07.20 Negative speed limit/Speed limit 2 in torque control**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2007-15h | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 3000     | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the negative torque reference source in torque control.

**H07.21 Torque reach base value**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-16h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 400.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

0.0% to 400.0%

**Description**

Defines the torque reference source of the base value for torque reach.

**H07.22 Torque reach valid value**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-17h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 400.0    | Data Type:      | UInt16    |
| Default: | 20.0     | Change:         | Real-time |

**Value Range:**

0.0% to 400.0%

**Description**

Defines the torque reference source of torque reach DO.

**H07.23 Torque reach invalid value**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-18h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 400.0    | Data Type:      | UInt16    |
| Default: | 10.0     | Change:         | Real-time |

**Value Range:**

0.0% to 400.0%



**Description**

Defines the torque reference source of torque reach DO.

**H07.24 Field weakening depth**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-19h | Effective mode: | Real time |
| Min.:    | 60       | Unit:           | %         |
| Max.:    | 115      | Data Type:      | UInt16    |
| Default: | 115      | Change:         | Real-time |

**Value Range:**

60% to 115%

**Description**

Defines the torque reference source of flux weakening.

**H07.25 Max. permissible demagnetizing current**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-1Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | %         |
| Max.:    | 300      | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

**Value Range:**

0% to 300%

**Description**

Defines the torque reference source of max. permissible demagnetizing current.

**H07.26 Field weakening selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-1Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Defines the torque reference source of flux weakening.

**H07.27 Flux weakening gain**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2007-1Ch | Effective mode: | Real time |
| Min.: | 0.001    | Unit:           | kHz       |

|          |       |            |           |
|----------|-------|------------|-----------|
| Max.:    | 1.000 | Data Type: | UInt16    |
| Default: | 0.030 | Change:    | Real-time |

**Value Range:**

0.001 kHz–1.000 kHz

**Description**

Defines the torque reference source of flux weakening.

**H07.28 Speed of flux weakening point**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2007-1Dh | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Defines the torque reference source of flux weakening point.

**H07.36 Time constant of low-pass filter 2**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-25h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 10.00    | Data Type:      | UInt16    |
| Default: | 0.00     | Change:         | Real-time |

**Value Range:**

0.00 ms to 10.00 ms

**Description**

Defines the torque reference source of low-pass filter 2.

**H07.37 Torque reference filter selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-26h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: First-order filter

1: Biquad filter

**Description**

Defines torque reference source of torque reference filter.

When second-order filter is selected, the filter structure is biquad filter for ROT motors, and the filter parameters are set through H07.38. For DDR/DDL motors, the filter structure is biquad low-pass filter, and the filter parameters are set through H07.42.

#### **H07.38      Biquad filter attenuation ratio**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-27h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 50       | Data Type:      | UInt16    |
| Default: | 16       | Change:         | Real-time |

##### **Value Range:**

0–50

##### **Description**

Defines the attenuation ratio of biquad filter.

#### **H07.40      Speed limit threshold in torque control mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-29h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 300      | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

##### **Value Range:**

0 ms to 300 ms

##### **Description**

Sets speed limit time window in the torque control mode.

#### **H07.42      Biquad low pass filter damping coefficient**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2007-2Bh | Effective mode: | Real time |
| Min.:    | 0.001    | Unit:           | -         |
| Max.:    | 10.000   | Data Type:      | UInt16    |
| Default: | 1.000    | Change:         | Real-time |

##### **Value Range:**

0.001–10.000

##### **Description**

Defines the damping coefficient of biquad low-pass filter.

## 4.9 H08 Gain Parameters

### H08.00 Speed loop gain

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-01h | Effective mode: | Real time |
| Min.:    | 0.1      | Unit:           | Hz        |
| Max.:    | 2000.0   | Data Type:      | UInt16    |
| Default: | 40.0     | Change:         | Real-time |

#### Value Range:

0.1 Hz–2000.0 Hz

#### Description

Defines the responsiveness of the speed loop. The higher the setpoint, the faster the speed loop response is. Note that an excessively high setpoint may cause vibration.

In the position control mode, the position loop gain must be increased together with the speed loop gain.

### H08.01 Speed loop integral time constant

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-02h | Effective mode: | Real time |
| Min.:    | 0.15     | Unit:           | ms        |
| Max.:    | 512.00   | Data Type:      | UInt16    |
| Default: | 19.89    | Change:         | Real-time |

#### Value Range:

0.15 ms to 512.00 ms

#### Description

Defines the integral time constant of the speed loop.

The lower the setpoint, the better the integral action, and the quicker will the deviation value be close to 0.

Note:

There is no integral action when H08.01 is set to 512.00.

### H08.02 Position loop gain

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-03h | Effective mode: | Real time |
| Min.:    | 0.1      | Unit:           | Hz        |
| Max.:    | 2000.0   | Data Type:      | UInt16    |
| Default: | 64.0     | Change:         | Real-time |

#### Value Range:

0.1 Hz–2000.0 Hz

#### Description

Defines the proportional gain of the position loop.

Defines the responsiveness of the position loop. A high setpoint shortens the positioning time. Note that an excessively high setpoint may cause vibration. The 1st group of gain parameters include H08.00 (Speed loop gain), H08.01 (Speed loop integral time constant), H08.02, and H07.05 (Filter time constant of torque reference).

**H08.03      2nd speed loop gain**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-04h | Effective mode: | Real time |
| Min.:    | 0.1      | Unit:           | Hz        |
| Max.:    | 2000.0   | Data Type:      | UInt16    |
| Default: | 75.0     | Change:         | Real-time |

**Value Range:**

0.1 Hz–2000.0 Hz

**Description**

-

**H08.04      2nd speed loop integral time constant**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-05h | Effective mode: | Real time |
| Min.:    | 0.15     | Unit:           | ms        |
| Max.:    | 512.00   | Data Type:      | UInt16    |
| Default: | 10.61    | Change:         | Real-time |

**Value Range:**

0.15 ms to 512.00 ms

**Description**

-

**H08.05      2nd position loop gain**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-06h | Effective mode: | Real time |
| Min.:    | 0.1      | Unit:           | Hz        |
| Max.:    | 2000.0   | Data Type:      | UInt16    |
| Default: | 120.0    | Change:         | Real-time |

**Value Range:**

0.1 Hz–2000.0 Hz

**Description**

Defines the second gain set of the position loop and speed loop. The 2nd group of gain parameters include H08.03 (Speed loop gain), H08.04 (Speed loop integral time constant), H08.05, and H07.06 (Torque reference filter time constant 2).

**H08.08 2nd gain mode setting**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-09h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

0: Fixed to the 1st gain, switched between P and PI as defined by bit26 of external 60FEh

1: Switched between the 1st and 2nd gain sets as defined by H08.09

**Description**

Defines the mode for switching to the 2nd gain set.

**H08.09 Gain switchover condition**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-0Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 10       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Fixed to the 1st gain set (PS)

1: Switched as defined by bit26 of 60FEh

2: Torque reference too large (PS)

3: Speed reference too large (PS)

4: Speed reference change rate too large (PS)

5: Speed reference low/high speed threshold (PS)

6: Position deviation too large (P)

7: Position reference available (P)

8: Positioning unfinished (P)

9: Actual speed (P)

10: Position reference + Actual speed (P)

**Description**

Defines the gain switchover condition.

**H08.10 Gain switchover delay**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-0Bh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | ms        |
| Max.:    | 1000.0   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0 ms to 1000.0 ms

**Description**

Defines the delay when the drive switches from the 2nd gain set to the 1st gain set.

**H08.11 Gain switchover level**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-0Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 20000    | Data Type:      | UInt16    |
| Default: | 50       | Change:         | Real-time |

**Value Range:**

0–20000

**Description**

Defines the gain switchover level.

Gain switchover is affected by both the level and the dead time, as defined by H08.09. The unit of gain switchover level varies with the switchover condition.

**H08.12 Gain switchover hysteresis**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-0Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 20000    | Data Type:      | UInt16    |
| Default: | 30       | Change:         | Real-time |

**Value Range:**

0–20000

**Description**

Defines the dead time for gain switchover.

Gain switchover is affected by both the level and the dead time, as defined by H08.09. The unit of gain switchover hysteresis varies with the switchover condition.

Note:

The set value of H08.11 (Gain switchover level) must be no less than that of H08.12; otherwise, the H08.11 will be set to a value equal to H08.12 automatically.

**H08.13 Position gain switchover time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-0Eh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | ms        |
| Max.:    | 1000.0   | Data Type:      | UInt16    |
| Default: | 3.0      | Change:         | Real-time |

**Value Range:**

0.0 ms to 1000.0 ms

**Description**

In position control, if H08.05 (2nd position loop gain) is much higher than H08.02 (Position loop gain), set the time for switching from H08.02 to H08.05. This parameter can be used to reduce the impact caused by an increase in the position loop gain.

**H08.15 Load moment of inertia ratio**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-10h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | -         |
| Max.:    | 120.00   | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | Real-time |

**Value Range:**

0.00–120.00

**Description**

Defines the mechanical load inertia ratio relative to the motor moment of inertia.

When H08.15 is set to 0, it indicates the motor carries no load; if it is set to 1.00, it indicates the mechanical load inertia is the same as the motor moment of inertia.

**H08.17 Zero phase delay**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-12h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | ms        |
| Max.:    | 4.0      | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

0.0 ms to 4.0 ms

**Description**

-

**H08.18 Time constant of speed feedforward filter**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-13h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 64.00    | Data Type:      | UInt16    |
| Default: | 0.50     | Change:         | Real-time |

**Value Range:**



0.00 ms to 64.00 ms

**Description**

Defines the filter time constant of speed feedforward.

**H08.19 Speed feedforward gain**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-14h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

0.0% to 100.0%

**Description**

In position control and full closed-loop control, speed feedforward is the product of speed feedforward signal multiplied by H08.19 and is part of the speed reference.

Increasing the setpoint improves the responsiveness to position references and reduces the position deviation during operation at a constant speed.

Set H08.18 to a fixed value first, and then increase the value of H08.19 gradually from 0 to a certain value at which speed feedforward achieves the desired effect.

Adjust H08.18 and H08.19 repeatedly until a balanced performance is achieved.

Note:

For how to enable the speed feedforward function and select the speed feedforward signal, see H05.19 (Speed feedforward control).

**H08.20 Torque feedforward filter time constant**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-15h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 64.00    | Data Type:      | UInt16    |
| Default: | 0.50     | Change:         | Real-time |

**Value Range:**

0.00 ms to 64.00 ms

**Description**

Defines the filter time constant of torque feedforward.

**H08.21 Torque feedforward gain**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2008-16h | Effective mode: | Real time |
| Min.: | 0.0      | Unit:           | %         |

|          |       |            |           |
|----------|-------|------------|-----------|
| Max.:    | 300.0 | Data Type: | UInt16    |
| Default: | 0.0   | Change:    | Real-time |

**Value Range:**

0.0% to 300.0%

**Description**

In control modes other than torque control, torque feedforward is the product of torque feedforward signal multiplied by H08.21 and is part of the torque reference.

Increasing the setpoint improves the responsiveness to variable speed references.

Increasing the setpoint improves the responsiveness to position references and reduces the position deviation during operation at a constant speed.

During parameter adjustment, set H08.20 (Torque feedforward filter time constant) to the default value first, and then increase H08.21 gradually to enhance the effect of torque feedforward. When speed overshoot occurs, keep H08.21 unchanged and increase the value of H08.20. Adjust H08.20 and H08.21 repeatedly until a balanced performance is achieved.

Note:

For how to enable the torque feedforward function and select the torque feedforward signal, see H06.11 (Torque feedforward control).

**H08.22 Speed feedback filtering option**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-17h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 4        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Inhibited

1: 2 times

2: 4 times

3: 8 times

4: 16 times

**Description**

Defines the moving average filtering times for speed feedback.

The higher the setpoint, the weaker the speed feedback fluctuation, but the longer the feedback delay will be.

**H08.23 Cutoff frequency of speed feedback low-pass filter**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2008-18h | Effective mode: | Real time |
| Min.: | 100      | Unit:           | Hz        |

|          |      |            |           |
|----------|------|------------|-----------|
| Max.:    | 8000 | Data Type: | UInt16    |
| Default: | 8000 | Change:    | Real-time |

**Value Range:**

100 Hz–8000 Hz

**Description**

Defines the cutoff frequency for first-order low-pass filtering on the speed feedback.

Note:

The lower the setpoint, the weaker the speed feedback fluctuation, and the longer the feedback delay will be.

Setting this parameter to 4000 Hz negates the filtering effect.

**H08.24 PDFF control coefficient**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-19h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 200.0    | Data Type:      | UInt16    |
| Default: | 100.0    | Change:         | Real-time |

**Value Range:**

0.0% to 200.0%

**Description**

Defines the control mode of the speed loop.

When this parameter is set to 100.0, the speed loop adopts PI control (default) with quick dynamic response.

When this parameter is set to 0.0, speed loop integral action is enhanced, which filters out low-frequency interference but also slows down the dynamic response.

H08.24 can be used to keep a good responsiveness of the speed loop, with the anti-interference capacity in low-frequency bands improved and the speed feedback overshoot unaffected.

**H08.25 Speed measurement method**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-1Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: M-method

1: MT-method

**Description**

Activated only when it is set to 1 and a pulse encoder is used.

**H08.27 Speed observer cutoff frequency**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-1Ch | Effective mode: | Real time |
| Min.:    | 50       | Unit:           | Hz        |
| Max.:    | 600      | Data Type:      | UInt16    |
| Default: | 170      | Change:         | Real-time |

**Value Range:**

50 Hz–600 Hz

**Description**

Defines the cutoff frequency of the speed observer. Note that an excessively high setpoint may incur resonance. Decrease the setpoint properly in case of large speed feedback noise.

**H08.28 Speed observer inertia correction coefficient**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-1Dh | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | %         |
| Max.:    | 1600     | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

**Value Range:**

1% to 1600%

**Description**

Defines the speed observer inertia correction coefficient. If H08.15 is set based on the actual inertia, there is no need to adjust this parameter.

**H08.29 Speed observer filter time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-1Eh | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 10.00    | Data Type:      | UInt16    |
| Default: | 0.80     | Change:         | Real-time |

**Value Range:**

0.00 ms to 10.00 ms

**Description**

Defines the speed observer filter time. It is recommended to set this parameter to a value equal to the sum of H07.05 plus 0.2 ms.

**H08.31 Disturbance cutoff frequency**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2008-20h | Effective mode: | Real time |
| Min.: | 1        | Unit:           | Hz        |

|          |      |            |           |
|----------|------|------------|-----------|
| Max.:    | 4000 | Data Type: | UInt16    |
| Default: | 600  | Change:    | Real-time |

**Value Range:**

1 Hz–4000 Hz

**Description**

Defines the cutoff frequency of the disturbance observer. Increasing the setpoint improves the responsiveness of the disturbance observer and the compensation effect. Note that an excessively high setpoint may incur resonance.

**H08.32 Disturbance compensation gain**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-21h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | %         |
| Max.:    | 100      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0% to 100%

**Description**

Defines the compensation gain of the disturbance observer. The setpoint 100% indicates full compensation.

**H08.33 Disturbance observer inertia correction coefficient**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-22h | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | %         |
| Max.:    | 1600     | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

**Value Range:**

1% to 1600%

**Description**

Defines the disturbance observer inertia correction coefficient. If H08.15 is set based on the actual inertia, there is no need to adjust this parameter.

**H08.40 Speed observer selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-29h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: Enabled

### Description

Used to set the enable bit for speed observer.

## H08.42 Model control selection

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-2Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

### Value Range:

0: Disabled

1: Enabled

2: Reserved

### Description

Used to enable model tracking control.

## H08.43 Model gain

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-2Ch | Effective mode: | Real time |
| Min.:    | 0.1      | Unit:           | -         |
| Max.:    | 2000.0   | Data Type:      | UInt16    |
| Default: | 40.0     | Change:         | Real-time |

### Value Range:

0.1–2000.0

### Description

Defines the single inertia model gain. The higher the gain, the faster the position response. Note that an excessively high setpoint may incur excessive overshoot.

## H08.46 Feedforward value

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-2Fh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | -         |
| Max.:    | 102.4    | Data Type:      | UInt16    |
| Default: | 95.0     | Change:         | Real-time |

### Value Range:

0.0–102.4

### Description

Defines the speed feedforward gain for single inertia model control. If overshoot occurs, reduce the setpoint properly.

**H08.53 Medium- and low-frequency jitter suppression frequency 3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-36h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | Hz        |
| Max.:    | 300.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

0.0 Hz–300.0 Hz

**Description**

Set this parameter based on actual resonance frequency. The resonance suppression range is 100 Hz to 300 Hz.

**H08.54 Medium- and low-frequency jitter suppression compensation 3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-37h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | %         |
| Max.:    | 200      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0% to 200%

**Description**

Defines the compensation gain for medium- and low-frequency suppression compensation 3. The setpoint 200% indicates full compensation.

**H08.56 Medium- and low-frequency jitter suppression phase modulation 3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-39h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | %         |
| Max.:    | 600      | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

**Value Range:**

0% to 600%

**Description**

Adjust this parameter based on the actual compensation effect.

**H08.59 Medium- and low-frequency jitter suppression frequency 4**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-3Ch | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | Hz        |
| Max.:    | 300.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

0.0 Hz–300.0 Hz

**Description**

Set this parameter based on actual resonance frequency. The resonance suppression range is 100 Hz to 300 Hz.

**H08.60 Medium- and low-frequency jitter suppression compensation 4**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-3Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | %         |
| Max.:    | 200      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0% to 200%

**Description**

Defines the compensation gain for medium- and low-frequency suppression compensation 4. The setpoint 200% indicates full compensation.

**H08.61 Medium- and low-frequency jitter suppression phase modulation 4**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-3Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | %         |
| Max.:    | 600      | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

**Value Range:**

0% to 600%

**Description**

Adjust this parameter based on the actual compensation effect.

**H08.62 Position loop integral time constant**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-3Fh | Effective mode: | Real time |
| Min.:    | 0.15     | Unit:           | -         |
| Max.:    | 512.00   | Data Type:      | UInt16    |
| Default: | 512.00   | Change:         | Real-time |

**Value Range:**

0.15–512.00

**Description**

Defines the position loop integral time constant.



**H08.63      2nd position loop integral time constant**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-40h | Effective mode: | Real time |
| Min.:    | 0.15     | Unit:           | -         |
| Max.:    | 512.00   | Data Type:      | UInt16    |
| Default: | 512.00   | Change:         | Real-time |

**Value Range:**

0.15–512.00

**Description**

Defines the 2nd position loop integral time constant.

**H08.64      Speed observer feedback source**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-41h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: Enabled

**Description**

-

**H08.65      Zero deviation control selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-42h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Used to enable/disable zero deviation control.

**H08.66      Zero deviation control position average filter**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-43h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | ms        |
| Max.:    | 320.0    | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0 ms to 320.0 ms

### Description

Defines the average filter time of zero deviation control position. It is recommended to increase the setpoint in case of large noise caused by low command resolution.

## H08.68 Speed feedforward of zero deviation control

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-45h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 100.0    | Change:         | Real-time |

### Value Range:

0.0% to 100.0%

### Description

Defines the speed feedforward of zero deviation control.

## H08.69 Torque feedforward of zero deviation control

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-46h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 100.0    | Change:         | Real-time |

### Value Range:

0.0% to 100.0%

### Description

Defines the torque feedforward of zero deviation control.

## H08.90 Encoder scale spacing ripple suppressor enable

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2008-5Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 6        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

### Value Range:

0: Inhibited

1: 1st group activated only-adaptive mode

2: 1st group activated only-hysteresis mode

3: Two groups activated-adaptive mode

4: Two groups activated-hysteresis mode

### Description

- Sets encoder scale pitch ripple suppression.
- (1) This function is only used to suppress or eliminate the torque ripple of the control loop caused by the encoder scale pitch ripple, and to reduce the speed fluctuation and operating noise to a certain extent.
- (2) This function is not suitable for applications with frequent speed changes and short travels, and it is better for applications with long travels and slow speed changes (such as the digital printing industry).
- (3) The number of suppressors to be used is determined according to the number of torque ripple components caused by the encoder scale pith ripple.
- (4) The hysteretic mode is only suitable for reciprocating constant speed operation, and the adaptive mode is suitable for the occasion with slow speed change. You should choose the suitable mode as needed.

4.10 H09 Auto-tuning Parameters

|        |                                                                                                                                     |          |                        |
|--------|-------------------------------------------------------------------------------------------------------------------------------------|----------|------------------------|
| H09.00 | Auto-adjustment mode                                                                                                                |          |                        |
|        | Hex:                                                                                                                                | 2009-01h | Effective    Real time |
|        |                                                                                                                                     |          | mode:                  |
|        | Min.:                                                                                                                               | 0        | Unit:       -          |
|        | Max.:                                                                                                                               | 7        | Data Type: UInt16      |
|        | Default:                                                                                                                            | 4        | Change:    Real-time   |
|        | Value Range:                                                                                                                        |          |                        |
|        | 0: Disabled, manual gain tuning required                                                                                            |          |                        |
|        | 1: Enabled, gain parameters generated automatically based on the stiffness level                                                    |          |                        |
|        | 2: Positioning mode, gain parameters generated automatically based on the stiffness level                                           |          |                        |
|        | 3: Interpolation mode+Inertia auto-tuning                                                                                           |          |                        |
|        | 4: Normal mode+Inertia auto-tuning                                                                                                  |          |                        |
|        | 5: Stune mode 5                                                                                                                     |          |                        |
|        | 6: Quick positioning mode+Inertia auto-tuning                                                                                       |          |                        |
|        | Description                                                                                                                         |          |                        |
|        | Defines different gain tuning modes. Related gain parameters can be set manually or automatically according to the stiffness level. |          |                        |

|        |                           |          |                        |
|--------|---------------------------|----------|------------------------|
| H09.01 | Stiffness level selection |          |                        |
|        | Hex:                      | 2009-02h | Effective    Real time |
|        |                           |          | mode:                  |
|        | Min.:                     | 0        | Unit:       -          |

|          |    |            |           |
|----------|----|------------|-----------|
| Max.:    | 41 | Data Type: | UInt16    |
| Default: | 15 | Change:    | Real-time |

**Value Range:**

0–41

**Description**

Defines the stiffness level of the servo system. The higher the stiffness level, the stronger the gains and the quicker the response will be. But an excessively high stiffness level will cause vibration.

The setpoint 0 indicates the weakest stiffness and 41 indicates the strongest stiffness.

**H09.02 Mode selection of adaptive notch**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2009-03h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 4        | Data Type: | UInt16    |
| Default: | 0        | Change:    | Real-time |

**Value Range:**

0: Adaptive notch no longer updated

1: One adaptive notch activated (3rd notch)

2: Two adaptive notches activated (3rd and 4th notches)

3: Resonance point tested only (displayed in H09.24)

4: Adaptive notch cleared, values of 3rd and 4th notches restored to default

**Description**

Defines the operation mode of the adaptive notch.

**H09.03 Online inertia auto-tuning mode**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2009-04h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 3        | Data Type: | UInt16    |
| Default: | 0        | Change:    | Real-time |

**Value Range:**

0: Disabled

1: Enabled, changing slowly

2: Enabled, changing normally

3: Enabled, changing quickly

**Description**

Defines whether to enable online inertia auto-tuning and the inertia ratio update speed during online inertia auto-tuning.

**H09.05      Offline inertia auto-tuning mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-06h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Bi-directional

1: Unidirectional

**Description**

Defines the offline inertia auto-tuning mode. The offline inertia auto-tuning function can be enabled through H0d.02.

**H09.06      Max. speed of inertia auto-tuning**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2009-07h | Effective mode: | Real time    |
| Min.:    | 50       | Unit:           | [mm/s]/[rpm] |
| Max.:    | 1000     | Data Type:      | UInt16       |
| Default: | 500      | Change:         | At stop      |

**Value Range:**

50[mm/s]/[rpm]–1000[mm/s]/[rpm]

**Description**

Defines the maximum permissible speed reference in offline inertia auto-tuning mode.

During inertia auto-tuning, the higher the speed, the more accurate the auto-tuned values. Use the default setpoint in general cases.

**H09.07      Time constant for accelerating to max. speed during inertia auto-tuning**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-08h | Effective mode: | Real time |
| Min.:    | 20       | Unit:           | ms        |
| Max.:    | 800      | Data Type:      | UInt16    |
| Default: | 125      | Change:         | At stop   |

**Value Range:**

20 ms to 800 ms

**Description**

Defines the time for the motor to accelerate from 0 [mm/s]/[rpm] to the maximum speed of inertia auto-tuning (H09.06) during offline inertia auto-tuning.

**H09.08 Interval time after an individual inertia auto-tuning**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-09h | Effective mode: | Real time |
| Min.:    | 50       | Unit:           | ms        |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 800      | Change:         | At stop   |

**Value Range:**

50 ms to 10000 ms

**Description**

Defines the interval time between two consecutive speed references when H09.05 (Offline inertia auto-tuning mode) is set to 1 (Positive/Negative triangular wave mode).

**H09.09 Motor rotating distance per inertia auto-tuning**

|          |          |                 |            |
|----------|----------|-----------------|------------|
| Hex:     | 2009-0Ah | Effective mode: | Real time  |
| Min.:    | 0.00     | Unit:           | [mm]/[Rev] |
| Max.:    | 100.00   | Data Type:      | UInt16     |
| Default: | 1.00     | Change:         | Real-time  |

**Value Range:**

0.00[mm]/[Rev]–100.00[mm]/[Rev]

**Description**

Defines the motor revolutions per inertia auto-tuning when H09.05 (Offline inertia auto-tuning mode) is set to 1 (Positive/Negative triangular wave mode).

Note:

When using the offline inertia auto-tuning function, check that the travel distance of the motor at the stop position is larger than the value of H09.09. If not, decrease the value of H09.06 (Maximum speed for inertia auto-tuning) or H09.07 (Time constant of accelerating to max. speed during inertia auto-tuning) properly until the motor travel distance fulfills the requirement.

**H09.11 Vibration threshold**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-0Ch | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0% to 100.0%

**Description**

Defines the warning threshold for current feedback vibration.

### H09.12 Frequency of the 1st notch

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2009-0Dh | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 50       | Unit:      | Hz        |
| Max.:    | 8000     | Data Type: | UInt16    |
| Default: | 8000     | Change:    | Real-time |

**Value Range:**

50 Hz–8000 Hz

**Description**

Defines the center frequency of the notch, which is the mechanical resonance frequency.

In the torque control mode, setting the notch frequency to 4000 Hz deactivates the notch function.

### H09.13 Width level of the 1st notch

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2009-0Eh | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 20       | Data Type: | UInt16    |
| Default: | 2        | Change:    | Real-time |

**Value Range:**

0–20

**Description**

Defines the width level of the notch. Use the default setpoint in general cases.

Width level is the ratio of the notch width to the notch center frequency.

### H09.14 Depth level of the 1st notch

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2009-0Fh | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 99       | Data Type: | UInt16    |
| Default: | 0        | Change:    | Real-time |

**Value Range:**

0–99

**Description**

Defines the depth level of the notch.

The depth level of the notch is the ratio between the input to the output at the notch center frequency.

The higher the setpoint, the lower the notch depth and the weaker the mechanical resonance suppression will be. Note that an excessively high setpoint may cause system instability.

**H09.15 Frequency of the 2nd notch**

Hex: 2009-10h

Effective Real time

mode:

Min.: 50

Unit: Hz

Max.: 8000

Data Type: UInt16

Default: 8000

Change: Real-time

**Value Range:**

50 Hz–8000 Hz

**Description**

-

**H09.16 Width level of the 2nd notch**

Hex: 2009-11h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 20

Data Type: UInt16

Default: 2

Change: Real-time

**Value Range:**

0–20

**Description**

-

**H09.17 Depth level of the 2nd notch**

Hex: 2009-12h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 99

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0–99

**Description**

-

**H09.18 Frequency of the 3rd notch**

Hex: 2009-13h

Effective Real time

mode:

Min.: 50

Unit: Hz

Max.: 8000

Data Type: UInt16

Default: 8000

Change: Real-time

**Value Range:**

50 Hz–8000 Hz



**Description**

-

**H09.19****Width level of the 3rd notch**

Hex: 2009-14h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 20

Data Type: UInt16

Default: 2

Change: Real-time

**Value Range:**

0–20

**Description**

-

**H09.20****Depth level of the 3rd notch**

Hex: 2009-15h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 99

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0–99

**Description**

-

**H09.21****Frequency of the 4th notch**

Hex: 2009-16h

Effective mode: Real time

Min.: 50

Unit: Hz

Max.: 8000

Data Type: UInt16

Default: 8000

Change: Real-time

**Value Range:**

50 Hz–8000 Hz

**Description**

-

**H09.22****Width level of the 4th notch**

Hex: 2009-17h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 20

Data Type: UInt16

Default: 2

Change: Real-time

**Value Range:**

0–20

**Description**

-

**H09.23 Depth level of the 4th notch**

Hex: 2009-18h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 99

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0–99

**Description**

-

**H09.24 Auto-tuned resonance frequency**

Hex: 2009-19h

Effective mode: -

Min.: 0

Unit: Hz

Max.: 5000

Data Type: UInt16

Default: 0

Change: Unchangeable

**Value Range:**

0 Hz–5000 Hz

**Description**

When H09.02 (Adaptive notch mode) is set to 3, the current mechanical resonance frequency is displayed.

**H09.32 Gravity compensation value**

Hex: 2009-21h

Effective mode: Real time

Min.: -100.0

Unit: %

Max.: 100.0

Data Type: Int16

Default: 0.0

Change: Real-time

**Value Range:**

-100.0% to 100.0%

**Description**

Defines the gravity compensation value. Setting this parameter properly in vertical axis applications can reduce the falling amplitude upon start.

**H09.33 Positive friction compensation value**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-22h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

0.0% to 100.0%

**Description**

Defines the forward friction compensation value.

**H09.34 Negative friction compensation value**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-23h | Effective mode: | Real time |
| Min.:    | -100.0   | Unit:           | %         |
| Max.:    | 0.0      | Data Type:      | Int16     |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

-100.0% to 0.0%

**Description**

Defines the reverse direction friction compensation value.

**H09.35 Friction compensation speed**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-24h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | -         |
| Max.:    | 20.0     | Data Type:      | UInt16    |
| Default: | 2.0      | Change:         | Real-time |

**Value Range:**

0.0–20.0

**Description**

Defines the friction compensation speed.

**H09.36 Friction compensation speed**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-25h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 19       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Slow mode+Speed reference  
 1: Slow mode+Model speed  
 2: Slow mode+Speed feedback  
 3: Slow mode+Observe speed  
 16: Quick mode +Speed reference  
 17: Quick mode +Model speed  
 18: Quick mode +Speed feedback  
 19: Quick mode+Observe speed

**Description**

-

**H09.37 Vibration monitoring time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-26h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 300      | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

The resonance detection suppression function is turned off automatically after the time defined by this parameter elapses. To suppress the resonance suppression function, set this parameter to 65536.

**H09.38 Frequency of low-frequency resonance suppression 1 at the mechanical end**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-27h | Effective mode: | Real time |
| Min.:    | 1.0      | Unit:           | Hz        |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 100.0    | Change:         | Real-time |

**Value Range:**

1.0 Hz–100.0 Hz

**Description**

Set this parameter based on the actual jitter frequency.

**H09.39 Low-frequency resonance suppression 1 at the mechanical end**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2009-28h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 3        | Data Type:      | UInt16    |

Default: 2 Change: At stop

**Value Range:**

0–3

**Description**

Defines different low-frequency resonance suppression types at the mechanical load. Type 1 features the shortest delay.

**H09.44 Frequency of low-frequency resonance suppression 2 at mechanical load end**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-2Dh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | -         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

0.0–100.0

**Description**

Set this parameter based on the actual jitter frequency.

**H09.45 Responsiveness of low-frequency resonance suppression 2 at mechanical load end**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-2Eh | Effective mode: | Real time |
| Min.:    | 0.01     | Unit:           | -         |
| Max.:    | 5.00     | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | Real-time |

**Value Range:**

0.01–5.00

**Description**

Use the default setpoint in general cases. To increase the setpoint, reduce the delay time.

**H09.47 Width of low-frequency resonance suppression 2 at mechanical load end**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-30h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | -         |
| Max.:    | 2.00     | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | Real-time |

**Value Range:**

0.00–2.00

**Description**

Use the default setpoint in general cases. To increase the setpoint, increase the delay time.

**H09.49 Frequency of low-frequency resonance suppression 3 at mechanical load end**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-32h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | -         |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

0.0–100.0

**Description**

-

**H09.50 Responsiveness of low-frequency resonance suppression 3 at mechanical load end**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-33h | Effective mode: | Real time |
| Min.:    | 0.01     | Unit:           | -         |
| Max.:    | 5.00     | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | Real-time |

**Value Range:**

0.01–5.00

**Description**

-

**H09.52 Width of low-frequency resonance suppression 3 at mechanical load end**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-35h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | -         |
| Max.:    | 2.00     | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | Real-time |

**Value Range:**

0.00–2.00

**Description**

-

**H09.54 Resonance detection torque threshold**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2009-37h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |       |            |           |
|----------|-------|------------|-----------|
| Min.:    | 0.0   | Unit:      | %         |
| Max.:    | 300.0 | Data Type: | UInt16    |
| Default: | 50.0  | Change:    | Real-time |

**Value Range:**

0.0% to 300.0%

**Description**

If the torque fluctuation exceeds the setpoint, an error will be reported. Setting this parameter to 0 hides the resonance detection function.

**H09.56 Max. overshoot allowed by ETune**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-39h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 2936     | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

Defines the maximum overshoot value allowed during ETune adjustment.

**H09.57 STune resonance suppression switchover frequency**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-3Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | Hz        |
| Max.:    | 4000     | Data Type:      | UInt16    |
| Default: | 650      | Change:         | Real-time |

**Value Range:**

0 Hz–4000 Hz

**Description**

If the resonance frequency is lower than the setpoint, use medium-frequency resonance suppression 2 to suppress resonance. Otherwise, use the notch to suppress resonance.

**H09.58 STune resonance suppression reset selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-3Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Used to enable STune resonance suppression reset to clear parameters related to resonance suppression, medium-frequency resonance suppression 2 and notches 3 and 4.

**H09.62 Stune stop delay judgment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-3Fh | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | ms        |
| Max.:    | 50.00    | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | Real-time |

**Value Range:**

0.00 ms to 50.00 ms

**Description**

-

**H09.63 STune quick convergence speed**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-40h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | -         |
| Max.:    | 50.00    | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | Real-time |

**Value Range:**

0.00–50.00

**Description**

-

**H09.71 Starting frequency**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-48h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | Hz        |
| Max.:    | 8000     | Data Type:      | UInt16    |
| Default: | 15       | Change:         | Real-time |

**Value Range:**

0 Hz–8000 Hz

**Description**

-

**H09.72 End frequency**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2009-49h | Effective mode: | Real time |
|------|----------|-----------------|-----------|



|                     |      |            |           |
|---------------------|------|------------|-----------|
| Min.:               | 0    | Unit:      | Hz        |
| Max.:               | 8000 | Data Type: | UInt16    |
| Default:            | 4000 | Change:    | Real-time |
| <b>Value Range:</b> |      |            |           |
| 0 Hz–8000 Hz        |      |            |           |
| <b>Description</b>  |      |            |           |
| -                   |      |            |           |

**H09.73      Frequency subdivision**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2009-4Ah | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 500      | Data Type:      | UInt16    |
| Default:            | 50       | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0–500               |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H09.74      Excitation amplitude**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2009-4Bh | Effective mode: | Real time |
| Min.:               | 0.0      | Unit:           | %         |
| Max.:               | 400.0    | Data Type:      | UInt16    |
| Default:            | 15.0     | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0.0% to 400.0%      |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H09.75      Starting frequency 2**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2009-4Ch | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | Hz        |
| Max.:               | 8000     | Data Type:      | UInt16    |
| Default:            | 500      | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0 Hz–8000 Hz        |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H09.76 Frequency subdivision 2**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-4Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1000     | Data Type:      | UInt16    |
| Default: | 500      | Change:         | Real-time |

**Value Range:**

0–1000

**Description**

-

**H09.77 Biquad filter mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-4Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 6        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: First-order low-pass

2: Second-order low-pass

3: Notch

4: Lead-lag

5: User-defined

**Description**

Used to select biquad filter mode.

**H09.78 Biquad filter numerator frequency**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2009-4Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | Hz        |
| Max.:    | 16000    | Data Type:      | UInt16    |
| Default: | 8000     | Change:         | Real-time |

**Value Range:**

0 Hz–16000 Hz

**Description**

-

**H09.79 Biquad filter numerator damping coefficient**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2009-50h | Effective mode: | Real time |
| Min.: | 0.001    | Unit:           | -         |

|                     |        |            |           |
|---------------------|--------|------------|-----------|
| Max.:               | 10.000 | Data Type: | UInt16    |
| Default:            | 1.000  | Change:    | Real-time |
| <b>Value Range:</b> |        |            |           |
| 0.001–10.000        |        |            |           |
| <b>Description</b>  |        |            |           |
| -                   |        |            |           |

**H09.80 Biquad filter denominator frequency**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2009-51h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | Hz        |
| Max.:               | 16000    | Data Type:      | UInt16    |
| Default:            | 8000     | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0 Hz–16000 Hz       |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H09.81 Biquad filter denominator damping coefficient**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2009-52h | Effective mode: | Real time |
| Min.:               | 0.001    | Unit:           | -         |
| Max.:               | 10.000   | Data Type:      | UInt16    |
| Default:            | 1.000    | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0.001–10.000        |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**4.11 H0A Fault and Protection Parameters****H0A.00 Power input phase loss protection**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 200A-01h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 1        | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0: Enable           |          |                 |           |
| 1: Disable          |          |                 |           |

**Description**

Servo drives supporting single-phase/three-phase 220 V and three-phase 380 V power supplies are available. When voltage fluctuation or phase loss occurs on the power supply, the drive triggers power input phase loss protection based on H0A.00.

**H0A.01 Absolute position limit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-02h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: Enabled

2: Enabled after homing

**Description**

Used to set the activation condition for enabling the software position limit function and the software limit.

**H0A.04 Motor overload protection gain**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-05h | Effective mode: | Real time |
| Min.:    | 50       | Unit:           | -         |
| Max.:    | 300      | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

**Value Range:**

50–300

**Description**

Determines the motor overload duration before E620.0 (Motor overload) is reported.

You can change the setpoint to advance or delay the time when overload protection is triggered based on the motor temperature. The setpoint 50% indicates the time is cut by half; 150% indicates the time is increased by 50%. Set this parameter based on the actual temperature of the motor.

**H0A.08 Overspeed threshold**

|       |          |                 |              |
|-------|----------|-----------------|--------------|
| Hex:  | 200A-09h | Effective mode: | Real time    |
| Min.: | 0        | Unit:           | [mm/s]/[rpm] |
| Max.: | 20000    | Data Type:      | UInt16       |

Default: 0 Change: Real-time

**Value Range:**

0[mm/s]/[rpm]–20000[mm/s]/[rpm]

**Description**

Defines the overspeed threshold of the motor.

**H0A.10 Threshold of excessive local position deviation**

Hex: 200A-0Bh Effective mode: Real time

Min.: 0 Unit: Encoder unit

Max.: 4294967295 Data Type: UInt32

Default: 219895614 Change: Real-time

**Value Range:**

0 to 4294967295

**Description**

Defines the threshold for excessive position deviation in the position control mode.

When the position deviation exceeds this threshold, the drive reports EB00.0 (Position deviation too large).

**H0A.12 Runaway protection enable**

Hex: 200A-0Dh Effective mode: Real time

Min.: 0 Unit: -

Max.: 1 Data Type: UInt16

Default: 1 Change: Real-time

**Value Range:**

0: Disable

1: Enable

**Description**

Defines whether to enable runaway protection.

0: Disables E234.0 detection when the motor drives a vertical axis or is driven by the load

1: Enables runaway protection

**H0A.13 Angle auto-tuning mode**

Hex: 200A-0Eh Effective mode: Real time

Min.: 0 Unit: -

Max.: 10 Data Type: UInt16

Default: 0 Change: At stop

**Value Range:**

0: pre-positioning  
 1: Inching  
 6: Static hall  
 8: Closed-loop pre-positioning  
 9: Position locking

**Description**

Selects the motor angle auto-tuning mode:

0: pre-positioning  
 1: Inching  
 6: Static hall  
 8: Closed-loop pre-positioning  
 9: Position locking

**H0A.17****Reference pulse selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-12h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

**Value Range:**

0: Pulse unit  
 1: Reference unit

**Description**

Used to set the threshold unit for large position deviation, positioning completion, and positioning proximity.

**H0A.18****IGBT over-temperature threshold**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-13h | Effective mode: | Real time |
| Min.:    | 120      | Unit:           | °C        |
| Max.:    | 175      | Data Type:      | UInt16    |
| Default: | 140      | Change:         | Real-time |

**Value Range:**

120°C–175°C

**Description**

Defines the threshold for reporting E640.0 (IGBT overtemperature) and E640.1 (Flywheel diode overtemperature).

**H0A.19 Filter time constant of touch probe 1**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-14h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | us        |
| Max.:    | 6.30     | Data Type:      | UInt16    |
| Default: | 2.00     | Change:         | Real-time |

**Value Range:**

0.00us–6.30us

**Description**

Defines the filter time of touch probe 1. An active input must last for the time defined by H0A.19.

**H0A.20 Filter time constant of touch probe 2**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-15h | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | us        |
| Max.:    | 6.30     | Data Type:      | UInt16    |
| Default: | 2.00     | Change:         | Real-time |

**Value Range:**

0.00us–6.30us

**Description**

Defines the filter time of touch probe 2. An active input must last for the time defined by H0A.20.

**H0A.21 STO function display selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-16h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 7        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–7

**Description**

Defines whether to display the STO status or report E150.0 after the STO function is triggered.

0: Displays the STO status. The keypad displays "sto\_" after the STO function is triggered. In this case, no fault is reported and no output is generated from the fault DO.

1: Displays the STO fault. The keypad displays "E150.0" after the STO function is triggered. In this case, the dive reports the fault and the faulty DO outputs.

|                     |                              |                 |                        |
|---------------------|------------------------------|-----------------|------------------------|
| <b>H0A.23</b>       | <b>TZ signal filter time</b> |                 |                        |
| Hex:                | 200A-18h                     | Effective mode: | Upon the next power-on |
| Min.:               | 0                            | Unit:           | 25ns                   |
| Max.:               | 31                           | Data Type:      | UInt16                 |
| Default:            | 15                           | Change:         | At stop                |
| <b>Value Range:</b> |                              |                 |                        |
| 0–31                |                              |                 |                        |
| <b>Description</b>  |                              |                 |                        |
| -                   |                              |                 |                        |

|                                                                                                                |                                              |                 |           |
|----------------------------------------------------------------------------------------------------------------|----------------------------------------------|-----------------|-----------|
| <b>H0A.25</b>                                                                                                  | <b>Speed display DO low-pass filter time</b> |                 |           |
| Hex:                                                                                                           | 200A-1Ah                                     | Effective mode: | Real time |
| Min.:                                                                                                          | 0                                            | Unit:           | ms        |
| Max.:                                                                                                          | 5000                                         | Data Type:      | UInt16    |
| Default:                                                                                                       | 0                                            | Change:         | At stop   |
| <b>Value Range:</b>                                                                                            |                                              |                 |           |
| 0 ms to 5000 ms                                                                                                |                                              |                 |           |
| <b>Description</b>                                                                                             |                                              |                 |           |
| Defines the low-pass filter time constant of the speed information for speed feedback and position references. |                                              |                 |           |

|                                                            |                                 |                 |           |
|------------------------------------------------------------|---------------------------------|-----------------|-----------|
| <b>H0A.26</b>                                              | <b>Motor overload detection</b> |                 |           |
| Hex:                                                       | 200A-1Bh                        | Effective mode: | Real time |
| Min.:                                                      | 0                               | Unit:           | -         |
| Max.:                                                      | 1                               | Data Type:      | UInt16    |
| Default:                                                   | 0                               | Change:         | Real-time |
| <b>Value Range:</b>                                        |                                 |                 |           |
| 0: Show motor overload warning (E909.0) and fault (E620.0) |                                 |                 |           |
| 1: Hide motor overload warning (E909.0) and fault (E620.0) |                                 |                 |           |
| <b>Description</b>                                         |                                 |                 |           |
| Defines whether to enable motor overload detection.        |                                 |                 |           |

|                     |                                                 |                 |           |
|---------------------|-------------------------------------------------|-----------------|-----------|
| <b>H0A.27</b>       | <b>Average filter time for speed display DO</b> |                 |           |
| Hex:                | 200A-1Ch                                        | Effective mode: | Real time |
| Min.:               | 0                                               | Unit:           | ms        |
| Max.:               | 100                                             | Data Type:      | UInt16    |
| Default:            | 50                                              | Change:         | At stop   |
| <b>Value Range:</b> |                                                 |                 |           |



0 ms to 100 ms

**Description**

Defines the average filter time constant of the speed information for speed feedback and position references.

**H0A.28      Quadrature encoder filter time**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200A-1Dh | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | 25ns                   |
| Max.:    | 255      | Data Type:      | UInt16                 |
| Default: | 2        | Change:         | At stop                |

**Value Range:**

0–255

**Description**

Defines the quadrature encoder feedback filter time.

**H0A.29      Fully closed-loop encoder (ABZ) filter time**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200A-1Eh | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | 25ns                   |
| Max.:    | 65535    | Data Type:      | UInt16                 |
| Default: | 4111     | Change:         | At stop                |

**Value Range:**

0–65535

**Description**

High 8 bits: Fully closed-loop wire breakage filter time

Low 8 bits: Fully closed-loop ABZ signal filter time

**H0A.32      Time threshold for locked motor overheat protection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-21h | Effective mode: | Real time |
| Min.:    | 10       | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 200      | Change:         | Real-time |

**Value Range:**

10 ms to 65535 ms

**Description**

Defines the overtemperature duration before E630.0 (Motor stall) is detected by the servo drive.

H0A.32 can be used to adjust the sensitivity of motor stall overtemperature detection.

**H0A.33 Locked motor overheat protection**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 200A-22h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 1        | Data Type: | UInt16    |
| Default: | 1        | Change:    | Real-time |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Enables or disables the detection for E630.0 (Motor stall overtemperature protection).

**H0A.36 Encoder multi-turn overflow fault selection**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 200A-25h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 1        | Data Type: | UInt16    |
| Default: | 0        | Change:    | Real-time |

**Value Range:**

0: Not hide

1: Hide

**Description**

Defines whether to hide the encoder multi-turn overflow fault in the absolute position linear mode (H02.01 = 1).

**H0A.40 Compensation function selection**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 200A-29h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 31       | Data Type: | UInt16    |
| Default: | 6        | Change:    | At stop   |

**Value Range:**

| bit | Name                               | Description                    |
|-----|------------------------------------|--------------------------------|
| 0   | Overtravel compensation            | 0: Enabled                     |
|     |                                    | 1: Disabled                    |
| 1   | Probe rising edge compensation     | 0: Disabled                    |
|     |                                    | 1: Enabled                     |
| 2   | Probe falling edge compensation    | 0: Disabled                    |
|     |                                    | 1: Enabled                     |
| 3   | Probe scheme                       | 0: New scheme                  |
|     |                                    | 1: Old scheme (same as SV660N) |
| 4   | Probe 2 separate compensation time | 0: Disabled                    |
|     |                                    | 1: Enabled                     |

Description

-

H0A.41 Forward position of software position limit

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 200A-2Ah    | Effective mode: | Real time    |
| Min.:    | -2147483648 | Unit:           | Encoder unit |
| Max.:    | 2147483647  | Data Type:      | Int32        |
| Default: | 2147483647  | Change:         | At stop      |

Value Range:

-2147483648 to 2147483647

Description

When the absolute position counter (H0b.07) is larger than H0A.41, the servo drive reports E950.0 (Forward limit switch warning) and executes stop at forward limit.

**H0A.43****Reverse position of software position limit**

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 200A-2Ch    | Effective mode: | Real time    |
| Min.:    | -2147483648 | Unit:           | Encoder unit |
| Max.:    | 2147483647  | Data Type:      | Int32        |
| Default: | -2147483648 | Change:         | At stop      |

**Value Range:**

-2147483648 to 2147483647

**Description**

When the absolute position counter (H0b.07) is smaller than H0A.43, the servo drive reports warning E952.0 (Reverse limit switch warning) and executes stop at reverse limit.

**H0A.50****Encoder communication fault tolerance threshold**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200A-33h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 31       | Data Type:      | UInt16                 |
| Default: | 31       | Change:         | Real-time              |

**Value Range:**

0–31

**Description**

When the communication between the encoder and the drive fails continuously for more than H0A.50 times, it is considered as a communication failure with the encoder. When overspeed point mask is enabled, if the number of consecutive overspeed points exceed H0A.50, it is considered as a communication failure with the encoder.

**H0A.51****Phase loss detection filter times**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-34h | Effective mode: | Real time |
| Min.:    | 3        | Unit:           | 55ms      |
| Max.:    | 36       | Data Type:      | UInt16    |
| Default: | 20       | Change:         | Real-time |

**Value Range:**

3–36

**Description**

Phase loss fault is reported when phase loss keeps active for a period longer than H0A.51.

**H0A.52**

**Encoder temperature protection threshold**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 200A-35h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | °C        |
| Max.:    | 175      | Data Type: | UInt16    |
| Default: | 120      | Change:    | Real-time |

**Value Range:**

0°C–175°C

**Description**

Defines the temperature threshold for encoder overtemperature protection.

**H0A.53**

**Probe DI ON compensation time**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 200A-36h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | -3000    | Unit:      | 25ns      |
| Max.:    | 3000     | Data Type: | Int16     |
| Default: | 200      | Change:    | Real-time |

**Value Range:**

-3000–3000

**Description**

Used to compensate for the action time when the touch probe is switched on.

**H0A.54**

**Probe DI OFF compensation time**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 200A-37h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | -3000    | Unit:      | 25ns      |
| Max.:    | 3000     | Data Type: | Int16     |
| Default: | 1512     | Change:    | Real-time |

**Value Range:**

-3000–3000

**Description**

Used to compensate for the action time when the touch probe is switched off.

**H0A.55**

**Runaway current threshold**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 200A-38h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 100.0    | Unit:      | %         |
| Max.:    | 400.0    | Data Type: | UInt16    |
| Default: | 200.0    | Change:    | Real-time |

**Value Range:**

100.0% to 400.0%

**Description**

Defines the current threshold for runaway protection detection.

**H0A.56****Fault reset delay**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-39h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 60000    | Data Type:      | UInt16    |
| Default: | 10000    | Change:         | Real-time |

**Value Range:**

0 ms to 60000 ms

**Description**

-

**H0A.57****Runaway speed threshold**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200A-3Ah | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 1000     | Data Type:      | UInt16       |
| Default: | 50       | Change:         | Real-time    |

**Value Range:**

1[mm/s]/[rpm]–1000[mm/s]/[rpm]

**Description**

Defines the overspeed threshold for runaway protection detection.

**H0A.58****Runaway speed filter time**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200A-3Bh | Effective mode: | Upon the next power-on |
| Min.:    | 0.1      | Unit:           | ms                     |
| Max.:    | 100.0    | Data Type:      | UInt16                 |
| Default: | 2.0      | Change:         | Real-time              |

**Value Range:**

0.1 ms to 100.0 ms

**Description**

Defines the speed feedback filter time for runaway protection detection.

**H0A.59****Runaway protection detection time**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 200A-3Ch | Effective mode: | Real time |
| Min.: | 10       | Unit:           | ms        |
| Max.: | 1000     | Data Type:      | UInt16    |

Default: 30

Change: Real-time

**Value Range:**

10 ms to 1000 ms

**Description**

The runaway fault will be reported when runaway keeps active for a period longer than H0A.59.

**H0A.60**

**Black box function mode**

Hex: 200A-3Dh

Effective mode: Real time

Min.: 0

Unit: -

Max.: 3

Data Type: UInt16

Default: 1

Change: Real-time

**Value Range:**

0: Disable

1: Any fault

2: Designated fault

3: Triggered based on designated condition

**Description**

Defines the condition for triggering black box sampling.

**H0A.61**

**Designated fault code**

Hex: 200A-3Eh

Effective mode: Real time

Min.: 0.0

Unit: -

Max.: 6553.5

Data Type: UInt16

Default: 0.0

Change: Real-time

**Value Range:**

0.0–6553.5

**Description**

Defines the fault code for triggering the black box function.

**H0A.62**

**Trigger source**

Hex: 200A-3Fh

Effective mode: Real time

Min.: 0

Unit: -

Max.: 27

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0–27

**Description**

Defines the fault code for triggering the black box function through designated channel.

**H0A.63****Trigger level**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 200A-40h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

Defines the trigger level for triggering the black box function through designated channel.

**H0A.65****Trigger level**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-42h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 3        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Rising edge

1: Equal

2: Falling edge

3: Edge-triggered

**Description**

Defines the trigger mode for triggering the black box function through H0A.63.

**H0A.66****Trigger position**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-43h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | %         |
| Max.:    | 100      | Data Type:      | UInt16    |
| Default: | 75       | Change:         | Real-time |

**Value Range:**

0% to 100%

**Description**

Defines the pre-trigger position for triggering black box sampling.



**H0A.67**

**Sampling frequency**

Hex: 200A-44h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 2

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Current loop

1: Position loop

2: Main cycle

**Description**

Defines the frequency sampling mode during black box sampling.

**H0A.70**

**Overspeed threshold 2**

Hex: 200A-47h

Effective Real time

mode:

Min.: 0

Unit: [mm/s]/[rpm]

Max.: 20000

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0[mm/s]/[rpm]–20000[mm/s]/[rpm]

**Description**

Defines the speed threshold for reporting E500.2 (Position feedback pulse overspeed).

**H0A.71**

**Internal function switch**

Hex: 200A-48h

Effective Upon the next power-on

mode:

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 4098

Change: Real-time

**Value Range:**

0–65535

**Description**

| bit | Function                                                            | Description                                                                                                                       |
|-----|---------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| 0   | Motor overload curve selection                                      | 0: New motor overload curve<br>1: Old motor overload curve                                                                        |
| 1   | Power failure bleeder switch                                        | 0: Enable regenerative switch upon power failure<br>1: Hide regenerative switch upon power failure                                |
| 2   | Forced brake motor stop mode                                        | 0: Forced stop<br>1: Non-forced stop                                                                                              |
| 3   | New external characteristics switch of multi-speed DI mode          | 0: New characteristics<br>1: Old characteristics                                                                                  |
| 4   | E120.3 hide switch                                                  | 0: Hide<br>1: Do not hide                                                                                                         |
| 5   | Prohibit software reading parameters                                | 0: Disabled<br>1: Enabled                                                                                                         |
| 6   | E108.4 hide switch                                                  | 0: Do not hide<br>1: Hide                                                                                                         |
| 7   | CSV command interpolation                                           | 0: Sync interrupt interpolation<br>1: IRQ interrupt interpolation                                                                 |
| 8   | Data type of motor rated current, inertia, and back EMF coefficient | 0: 16-bit<br>1: 32-bit                                                                                                            |
| 9   | Wire breakage detection                                             | 0: Enabled<br>1: Disabled                                                                                                         |
| 10  | Torque limit source                                                 | 0: Auto switch acc. to H02.00<br>1: Set by H07.09 and H07.10                                                                      |
| 11  | Ultra-accurate speed feedback switch                                | 0: Off<br>1: On                                                                                                                   |
| 12  | Power failure retention of homing completion flag                   | 0: Disabled<br>1: Enabled                                                                                                         |
| 13  | STO status word fallback switch                                     | 0: Switch on disable<br>1: Fault                                                                                                  |
| 14  | Encoder adaptive function switch                                    | 0: On<br>1: Off                                                                                                                   |
| 15  | Interrupt positioning external characteristics                      | 0: Old external characteristics, follows motor operation direction<br>1: New external characteristics, direction set by parameter |

**H0A.72 Maximum stop time in ramp-to-stop**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-49h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10000    | Change:         | At stop   |

**Value Range:**

0 ms to 65535 ms

**Description**

Defines the time for the motor to decelerate from the maximum speed to 0 [mm/s]/[rpm] during ramp-to-stop.

**H0A.73 STO 24 V disconnection filter time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-4Ah | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | ms        |
| Max.:    | 5        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

1 ms to 5 ms

**Description**

Defines the delay from the moment when 24V is disconnected to the moment when the STO state applies.

**H0A.74 Filter time for two inconsistent STO channels**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-4Bh | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | ms        |
| Max.:    | 1000     | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

**Value Range:**

1 ms to 1000 ms

**Description**

Defines the delay from the moment the inconsistent 24V is input to the drive through two channels to the moment when the STO state applies.

**H0A.75 Servo OFF delay after STO triggered**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-4Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 25       | Data Type:      | UInt16    |
| Default: | 20       | Change:         | Real-time |

**Value Range:**

0 ms to 25 ms

**Description**

Defines the delay from the moment the STO state is triggered to the moment the S-ON signal is switched off.

**H0A.87 UUV Hall state monitoring window**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-58h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1000     | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

0–1000

**Description**

Defines the Hall signal filter time.

**H0A.88 DDL BiSS-C data alarm enable**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200A-59h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0–1

**Description**

Used to enable original BiSS-C data alarm function, which is only applicable to the encoder that adopts BiSS-C protocol.

**H0A.89 Correct state of DDL BiSS-C data**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200A-5Ah | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 31       | Data Type:      | UInt16                 |
| Default: | 1        | Change:         | At stop                |

**Value Range:**

0–31

**Description**

Defines the fault bit state during normal operation of BiSS-C.

**H0A.90 Speed display low-pass filter time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-5Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 100      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0 ms to 100 ms

**Description**

Defines the low-pass filter time constant for displayed speed values.

**H0A.91 Moving average filter time for torque display values**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-5Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 100      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0 ms to 100 ms

**Description**

Defines the moving average filter time constant for torque display values.

**H0A.92 Moving average filter time for position display values**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-5Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 100      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0 ms to 100 ms

**Description**

Defines the moving average filter time constant for position display values.

**H0A.93 Low-pass filter time for voltage display values**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-5Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 250      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0 ms to 250 ms

**Description**

Defines the low-pass filter time constant for voltage display values.

**H0A.94 Low-pass filter time for thermal display values**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200A-5Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 250      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0 ms to 250 ms

**Description**

Defines the filter time constant for thermal display values.

**4.12 H0b Monitoring Parameters****H0b.00 Motor speed actual value**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-01h | Effective mode: | -            |
| Min.:    | -32767   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 32767    | Data Type:      | Int16        |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

-32767[mm/s]/[rpm]–32767[mm/s]/[rpm]

**Description**

Indicates the actual motor speed after round-off, which is accurate to 1 [mm/s]/[rpm].

Set in H0A.25 (Filter time constant of speed feedback display) the filter time constant for H0b.00.

**H0b.01 Speed reference**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-02h | Effective mode: | -            |
| Min.:    | -32767   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 32767    | Data Type:      | Int16        |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

-32767[mm/s]/[rpm]–32767[mm/s]/[rpm]

**Description**

Indicates the present speed reference (accurate to 1 [mm/s]/[rpm]) of the drive in the position and speed control modes.

**H0b.02 Internal torque reference**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-03h | Effective mode: | -            |
| Min.:    | -500.0   | Unit:           | %            |
| Max.:    | 500.0    | Data Type:      | Int16        |
| Default: | 0.0      | Change:         | Unchangeable |

**Value Range:**

-500.0% to 500.0%

**Description**

Displays present torque reference (accurate to 0.1%). The value 100.0% corresponds to the rated torque of the motor.

**H0b.03 Input (DI) signal monitoring**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-04h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Displays the level status of eight DI terminals without filtering.

Upper LED segments ON: high level (indicated by "1") Lower LED segments ON: low level (indicated by "0")

**H0b.05 Output (DO) signal monitoring**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-06h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Displays the level status of 5 DO terminals without filtering.

Upper LED segments ON: high level (indicated by "1") Lower LED segments ON: low level (indicated by "0")

**H0b.07 Absolute position counter**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 200b-08h    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | -2147483648 | Unit:      | p            |
| Max.:    | 2147483647  | Data Type: | Int32        |
| Default: | 0           | Change:    | Unchangeable |

**Value Range:**

-2147483648p to 2147483647p

**Description**

Indicates present absolute position (reference unit) of the motor in the position control mode.

This parameter is a 32-bit integer, which is displayed as a decimal on the keypad.

**H0b.09 Mechanical angle**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-0Ah | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0.0      | Unit:      | °            |
| Max.:    | 360.0    | Data Type: | UInt16       |
| Default: | 0.0      | Change:    | Unchangeable |

**Value Range:**

0.0° to 360.0°

**Description**

Displays present mechanical angle (encoder unit) of the motor. The setpoint 0 indicates the mechanical angle is 0°.

Actual mechanical angle =  $360^\circ \times \text{H0b.09} / (\text{Maximum value of H0b.09} + 1)$

Maximum value of H0b.09 for an absolute encoder is 65535.

**H0b.10 Electrical angle**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-0Bh | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0.0      | Unit:      | °            |
| Max.:    | 360.0    | Data Type: | UInt16       |
| Default: | 0.0      | Change:    | Unchangeable |

**Value Range:**

0.0° to 360.0°

**Description**



Indicates the present electrical angle of the motor, which is accurate to 0.1°. The electrical angle variation range is  $\pm 360.0^\circ$  during rotation. If the motor has four pairs of poles, each revolution generates four rounds of angle change from 0° to 359°. Similarly, if the motor has five pairs of poles, each revolution generates five rounds of angle change from 0° to 359°.

**H0b.12 Average load ratio**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-0Dh | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0.0      | Unit:      | %            |
| Max.:    | 800.0    | Data Type: | UInt16       |
| Default: | 0.0      | Change:    | Unchangeable |

**Value Range:**

0.0% to 800.0%

**Description**

Displays the percentage of the average load torque to the rated torque of the motor, which is accurate to 0.1%. The value 100.0% corresponds to the rated torque of the motor.

**H0b.15 Position following error (encoder unit)**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 200b-10h    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | -2147483648 | Unit:      | p            |
| Max.:    | 2147483647  | Data Type: | Int32        |
| Default: | 0           | Change:    | Unchangeable |

**Value Range:**

-2147483648p to 2147483647p

**Description**

Used to count and display the position deviation value after being divided or multiplied by the electronic gear ratio in the position control mode.

This parameter is a 32-bit integer, which is displayed as a decimal on the keypad.

Note:

H0b.15 can be clear when the condition defined in H05.16 (Clear action) is met.

**H0b.17 Feedback pulse counter**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 200b-12h    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | -2147483648 | Unit:      | p            |
| Max.:    | 2147483647  | Data Type: | Int32        |
| Default: | 0           | Change:    | Unchangeable |

**Value Range:**

-2147483648p to 2147483647p

**Description**

Used to count the position pulses fed back by the encoder in any control mode.  
This parameter is a 32-bit integer, which is displayed as a decimal on the keypad.

**H0b.19****Total power-on time**

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 200b-14h    | Effective mode: | -            |
| Min.:    | 0.0         | Unit:           | s            |
| Max.:    | 429496729.5 | Data Type:      | UInt32       |
| Default: | 0.0         | Change:         | Unchangeable |

**Value Range:**

0.0s–429496729.5s

**Description**

Used to record the total operating time of the servo drive.  
This parameter is a 32-bit integer, which is displayed as a decimal on the keypad.

**Note:**

If the servo drive is switched on and off repeatedly within a short period of time, a deviation within 1h may be present in the total power-on time record.

**H0b.21****Displayed AI1 voltage**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-16h | Effective mode: | -            |
| Min.:    | -12.00   | Unit:           | V            |
| Max.:    | 12.00    | Data Type:      | Int16        |
| Default: | 0.00     | Change:         | Unchangeable |

**Value Range:**

-12.00 V–12.00 V

**Description**

Displays the actual sampling voltage of AI1.

**H0b.22****Displayed AI2 voltage**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-17h | Effective mode: | -            |
| Min.:    | -12.00   | Unit:           | V            |
| Max.:    | 12.00    | Data Type:      | Int16        |
| Default: | 0.00     | Change:         | Unchangeable |

**Value Range:**

-12.00 V–12.00 V

**Description**

Displays the actual sampling voltage of AI2.

**H0b.24 Phase current RMS value**

Hex: 200b-19h

Effective -

mode:

Min.: 0.0

Unit: A

Max.: 6553.5

Data Type: UInt16

Default: 0.0

Change: Unchangeable

**Value Range:**

0.0 A–6553.5 A

**Description**

Displays the RMS value of the phase current of the motor, accurate to 0.01 A.

**H0b.26 Bus voltage**

Hex: 200b-1Bh

Effective -

mode:

Min.: 0.0

Unit: V

Max.: 6553.5

Data Type: UInt16

Default: 0.0

Change: Unchangeable

**Value Range:**

0.0 V–6553.5 V

**Description**

Displays the DC bus voltage of the main circuit input voltage after rectification, which is accurate to 0.01 V.

**H0b.27 Module temperature**

Hex: 200b-1Ch

Effective -

mode:

Min.: -20

Unit: °C

Max.: 200

Data Type: Int16

Default: 0

Change: Unchangeable

**Value Range:**

-20°C–200°C

**Description**

Indicates the temperature of the module inside the servo drive, which can be used as a reference for estimating the actual temperature of the drive.

**H0b.28 Absolute encoder fault information given by FPGA**

Hex: 200b-1Dh

Effective -

mode:

|          |       |            |              |
|----------|-------|------------|--------------|
| Min.:    | 0     | Unit:      | -            |
| Max.:    | 65535 | Data Type: | UInt16       |
| Default: | 0     | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0b.29 Axis status information given by FPGA**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-1Eh | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0b.30 Axis fault information given by FPGA**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-1Fh | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0b.31 Encoder fault information**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-20h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

-

|        |                                           |          |                           |
|--------|-------------------------------------------|----------|---------------------------|
| H0b.33 | <b>Fault log</b>                          |          |                           |
|        | Hex:                                      | 200b-22h | Effective mode: Real time |
|        | Min.:                                     | 0        | Unit: -                   |
|        | Max.:                                     | 20       | Data Type: UInt16         |
|        | Default:                                  | 0        | Change: Real-time         |
|        | <b>Value Range:</b>                       |          |                           |
|        | 0: Present fault                          |          |                           |
|        | 1: Last fault                             |          |                           |
|        | 2: 2nd to last fault                      |          |                           |
|        | 3: 3rd to last fault                      |          |                           |
|        | 4: 4th to last fault                      |          |                           |
|        | 5: 5th to last fault 6: 6th to last fault |          |                           |
|        | 7: 7th to last fault                      |          |                           |
|        | 8: 8th to last fault                      |          |                           |
|        | 9: 9th to last fault                      |          |                           |
|        | 10: 10th to last fault                    |          |                           |
|        | 11: 11th to last fault                    |          |                           |
|        | 12: 12th to last fault                    |          |                           |
|        | 13: 13th to last fault                    |          |                           |
|        | 14: 14th to last fault                    |          |                           |
|        | 15: 15th to last fault                    |          |                           |
|        | 16: 16th to last fault                    |          |                           |
|        | 17: 17th to last fault                    |          |                           |
|        | 18: 18th to last fault                    |          |                           |
|        | 19: 19th to last fault                    |          |                           |

**Description**

Used to view the latest 20 faults of the drive.

|        |                                         |          |                      |
|--------|-----------------------------------------|----------|----------------------|
| H0b.34 | <b>Fault code of the selected fault</b> |          |                      |
|        | Hex:                                    | 200b-23h | Effective mode: -    |
|        | Min.:                                   | 0        | Unit: -              |
|        | Max.:                                   | 65535    | Data Type: UInt16    |
|        | Default:                                | 0        | Change: Unchangeable |
|        | <b>Value Range:</b>                     |          |                      |
|        | 0–65535                                 |          |                      |
|        | <b>Description</b>                      |          |                      |
|        | -                                       |          |                      |

**H0b.35      Timestamp of the selected fault**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 200b-24h    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | 0.0         | Unit:      | s            |
| Max.:    | 429496729.5 | Data Type: | UInt32       |
| Default: | 0.0         | Change:    | Unchangeable |

**Value Range:**

0.0s–429496729.5s

**Description**

-

**H0b.37      Motor speed upon occurrence of the selected fault**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-26h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | -32767   | Unit:      | [mm/s]/[rpm] |
| Max.:    | 32767    | Data Type: | Int16        |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

-32767[mm/s]/[rpm]–32767[mm/s]/[rpm]

**Description**

-

**H0b.38      Motor phase U current upon occurrence of the selected fault**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-27h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | -3276.7  | Unit:      | A            |
| Max.:    | 3276.7   | Data Type: | Int16        |
| Default: | 0.0      | Change:    | Unchangeable |

**Value Range:**

-3276.7 A–3276.7 A

**Description**

-

**H0b.39      Motor phase V current upon occurrence of the selected fault**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-28h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | -3276.7  | Unit:      | A            |
| Max.:    | 3276.7   | Data Type: | Int16        |
| Default: | 0.0      | Change:    | Unchangeable |

**Value Range:**

-3276.7 A–3276.7 A

**Description**

-

**H0b.40 Bus voltage upon occurrence of the selected fault**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-29h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0.0      | Unit:      | V            |
| Max.:    | 6553.5   | Data Type: | UInt16       |
| Default: | 0.0      | Change:    | Unchangeable |

**Value Range:**

0.0 V–6553.5 V

**Description**

-

**H0b.41 Input terminal state on selected fault**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-2Ah | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0b.43 Output terminal status upon occurrence of the selected fault**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-2Ch | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0b.45 Internal fault code**

|       |          |            |        |
|-------|----------|------------|--------|
| Hex:  | 200b-2Eh | Effective  | -      |
|       |          | mode:      |        |
| Min.: | 0        | Unit:      | -      |
| Max.: | 65535    | Data Type: | UInt16 |

Change: Unchangeable

0-65535

—

Hex: 200b-2Fh Effective -

Effective -

mode:

Unit: -

Data Type: UInt16

Change: Unchangeable

0-65535

—

## Hex: 200b-30h Effective -

Effective -

mode:

Unit: -

Data Type: UInt16

Change: Unchangeable

0-65535

1

|      |          |           |   |
|------|----------|-----------|---|
| Hex: | 200b-31h | Effective | - |
|------|----------|-----------|---|

Effective -

mode:

Unit: -

Data Type: UInt16

Change: Unchangeable

0-65535

—



|               |                                                                              |            |              |
|---------------|------------------------------------------------------------------------------|------------|--------------|
| <b>H0b.49</b> | <b>Encoder fault information upon occurrence of the selected fault</b>       |            |              |
| Hex:          | 200b-32h                                                                     | Effective  | -            |
|               |                                                                              | mode:      |              |
| Min.:         | 0                                                                            | Unit:      | -            |
| Max.:         | 65535                                                                        | Data Type: | UInt16       |
| Default:      | 0                                                                            | Change:    | Unchangeable |
|               | <b>Value Range:</b>                                                          |            |              |
|               | 0–65535                                                                      |            |              |
|               | <b>Description</b>                                                           |            |              |
|               | -                                                                            |            |              |
| <b>H0b.51</b> | <b>Internal fault code upon occurrence of the selected fault</b>             |            |              |
| Hex:          | 200b-34h                                                                     | Effective  | -            |
|               |                                                                              | mode:      |              |
| Min.:         | 0                                                                            | Unit:      | -            |
| Max.:         | 65535                                                                        | Data Type: | UInt16       |
| Default:      | 0                                                                            | Change:    | Unchangeable |
|               | <b>Value Range:</b>                                                          |            |              |
|               | 0–65535                                                                      |            |              |
|               | <b>Description</b>                                                           |            |              |
|               | -                                                                            |            |              |
| <b>H0b.52</b> | <b>FPGA timeout fault standard bit upon occurrence of the selected fault</b> |            |              |
| Hex:          | 200b-35h                                                                     | Effective  | -            |
|               |                                                                              | mode:      |              |
| Min.:         | 0                                                                            | Unit:      | -            |
| Max.:         | 65535                                                                        | Data Type: | UInt16       |
| Default:      | 0                                                                            | Change:    | Unchangeable |
|               | <b>Value Range:</b>                                                          |            |              |
|               | 0–65535                                                                      |            |              |
|               | <b>Description</b>                                                           |            |              |
|               | -                                                                            |            |              |
| <b>H0b.53</b> | <b>Position following error (reference unit)</b>                             |            |              |
| Hex:          | 200b-36h                                                                     | Effective  | -            |
|               |                                                                              | mode:      |              |
| Min.:         | -2147483648                                                                  | Unit:      | p            |
| Max.:         | 2147483647                                                                   | Data Type: | Int32        |
| Default:      | 0                                                                            | Change:    | Unchangeable |
|               | <b>Value Range:</b>                                                          |            |              |
|               | -2147483648p to 2147483647p                                                  |            |              |
|               | <b>Description</b>                                                           |            |              |

Indicates the position deviation value which has not been divided or multiplied by the electronic gear ratio in the position control mode.

Position deviation (reference unit) is the value obtained after enoder position deviation calculation. The precision is compromised during division.

This parameter is a 32-bit integer, which is displayed as a decimal on the keypad.

#### **H0b.55 Motor speed actual value**

|          |               |                 |              |
|----------|---------------|-----------------|--------------|
| Hex:     | 200b-38h      | Effective mode: | -            |
| Min.:    | -2147483648.0 | Unit:           | [mm/s]/[rpm] |
| Max.:    | 2147483647.0  | Data Type:      | Int32        |
| Default: | 0.0           | Change:         | Unchangeable |

##### **Value Range:**

-2147483648.0[mm/s]/[rpm]–2147483647.0[mm/s]/[rpm]

##### **Description**

Displays the actual motor speed, accurate to 0.1 [mm/s]/[rpm].

This parameter is a 32-bit integer, which is displayed as a decimal on the keypad.

H0A.25 (Filter time constant of speed feedback display) can be used to set the filter time constant of the speed feedback.

#### **H0b.57 Control circuit bus voltage**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200b-3Ah | Effective mode: | -            |
| Min.:    | 0.0      | Unit:           | V            |
| Max.:    | 6553.5   | Data Type:      | UInt16       |
| Default: | 0.0      | Change:         | Unchangeable |

##### **Value Range:**

0.0 V–6553.5 V

##### **Description**

Displays the bus voltage of the control circuit.

#### **H0b.58 Mechanical absolute position (low 32 bits)**

|          |            |                 |              |
|----------|------------|-----------------|--------------|
| Hex:     | 200b-3Bh   | Effective mode: | -            |
| Min.:    | 0          | Unit:           | p            |
| Max.:    | 4294967295 | Data Type:      | UInt32       |
| Default: | 0          | Change:         | Unchangeable |

##### **Value Range:**

0p to 4294967295p

**Description**

Displays the low 32-bit value (encoder unit) of the mechanical position feedback when the absolute encoder is used.

**H0b.60 Mechanical absolute position (high 32 bits)**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 200b-3Dh    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | -2147483648 | Unit:      | p            |
| Max.:    | 2147483647  | Data Type: | Int32        |
| Default: | 0           | Change:    | Unchangeable |

**Value Range:**

-2147483648p to 2147483647p

**Description**

Displays the high 32-bit value (encoder unit) of the mechanical position feedback when the absolute encoder is used.

**H0b.63 NotRdy state**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-40h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 9        | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0: Normal

1: Control circuit error

2: Main circuit power input error

3: Bus undervoltage

4: Soft start failed

5: Encoder initialization undone

6: Short circuit to ground failed

7: Others

9: Fully closed-loop encoder initialization not completed

**Description**

Displays the reason for the NRD state.

**H0b.66 Encoder temperature**

|       |          |            |       |
|-------|----------|------------|-------|
| Hex:  | 200b-43h | Effective  | -     |
|       |          | mode:      |       |
| Min.: | -32768   | Unit:      | °C    |
| Max.: | 32767    | Data Type: | Int16 |

Default: 0

Change: Unchangeable

**Value Range:**

-32768°C–32767°C

**Description**

-

**H0b.67 Load rate of braking resistor**

Hex: 200b-44h

Effective -

mode:

Min.: 0.0

Unit: %

Max.: 200.0

Data Type: UInt16

Default: 0.0

Change: Unchangeable

**Value Range:**

0.0% to 200.0%

**Description**

-

**H0b.70 Number of absolute encoder revolutions**

Hex: 200b-47h

Effective -

mode:

Min.: -32768

Unit: Rev

Max.: 32767

Data Type: Int16

Default: 0

Change: Unchangeable

**Value Range:**

-32768Rev to 32767Rev

**Description**

Indicates the number of revolutions of the absolute encoder.

**H0b.71 Single-turn position fed back by the absolute encoder**

Hex: 200b-48h

Effective -

mode:

Min.: 0

Unit: p

Max.: 2147483647

Data Type: UInt32

Default: 0

Change: Unchangeable

**Value Range:**

0p to 2147483647p

**Description**

Displays the position feedback of the absolute encoder within one turn.

**H0b.74 System fault information given by FPGA**

Hex: 200b-4Bh

Effective -

mode:

|          |       |            |              |
|----------|-------|------------|--------------|
| Min.:    | 0     | Unit:      | -            |
| Max.:    | 65535 | Data Type: | UInt16       |
| Default: | 0     | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0b.77 Encoder position (low 32 bits)**

|          |            |                 |              |
|----------|------------|-----------------|--------------|
| Hex:     | 200b-4Eh   | Effective mode: | -            |
| Min.:    | 0          | Unit:           | p            |
| Max.:    | 4294967295 | Data Type:      | UInt32       |
| Default: | 0          | Change:         | Unchangeable |

**Value Range:**

0p to 4294967295p

**Description**

Displays the low 32-bit value of the position feedback of the absolute encoder.

**H0b.79 Encoder position (high 32 bits)**

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 200b-50h    | Effective mode: | -            |
| Min.:    | -2147483648 | Unit:           | p            |
| Max.:    | 2147483647  | Data Type:      | Int32        |
| Default: | 0           | Change:         | Unchangeable |

**Value Range:**

-2147483648p to 2147483647p

**Description**

Displays the high 32-bit value of the position feedback of the absolute encoder.

**H0b.81 Single-turn position of the rotary load (low 32 bits)**

|          |            |                 |              |
|----------|------------|-----------------|--------------|
| Hex:     | 200b-52h   | Effective mode: | -            |
| Min.:    | 0          | Unit:           | p            |
| Max.:    | 4294967295 | Data Type:      | UInt32       |
| Default: | 0          | Change:         | Unchangeable |

**Value Range:**

0p to 4294967295p

**Description**

Displays the low 32-bit value of the position feedback of the rotary load when the absolute system works in the rotation mode.

**H0b.83 Single-turn position of the rotary load (high 32 bits)**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 200b-54h    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | -2147483648 | Unit:      | p            |
| Max.:    | 2147483647  | Data Type: | Int32        |
| Default: | 0           | Change:    | Unchangeable |

**Value Range:**

-2147483648p to 2147483647p

**Description**

Displays the high 32-bit value of the position feedback of the rotary load when the absolute system works the rotation mode.

**H0b.85 Single-turn position of the rotary load (reference unit)**

|          |            |            |              |
|----------|------------|------------|--------------|
| Hex:     | 200b-56h   | Effective  | -            |
|          |            | mode:      |              |
| Min.:    | 0          | Unit:      | p            |
| Max.:    | 4294967295 | Data Type: | UInt32       |
| Default: | 0          | Change:    | Unchangeable |

**Value Range:**

0p to 4294967295p

**Description**

Displays the high 32-bit value of the position feedback of the rotary load when the absolute system works the rotation mode.

**H0b.87 IGBT junction temperature**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-58h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 200      | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–200

**Description**

-

**H0b.90 Group No. of the abnormal parameter**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200b-5Bh | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0b.91 Offset within the group of the abnormal parameter**

Hex: 200b-5Ch

Effective -

mode:

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: Unchangeable

**Value Range:**

0–65535

**Description**

-

**H0b.92 Hall state**

Hex: 200b-5Dh

Effective -

mode:

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: Unchangeable

**Value Range:**

0–65535

**Description**

-

**H0b.94 Individual power-on time**

Hex: 200b-5Fh

Effective -

mode:

Min.: 0.0

Unit: s

Max.: 429496729.5

Data Type: UInt32

Default: 0.0

Change: Unchangeable

**Value Range:**

0.0s–429496729.5s

**Description**

Display the individual power-on time of the drive.

**H0b.96 Individual power-on time upon occurrence of the selected fault**

Hex: 200b-61h

Effective -

mode:

|          |             |            |              |
|----------|-------------|------------|--------------|
| Min.:    | 0.0         | Unit:      | s            |
| Max.:    | 429496729.5 | Data Type: | UInt32       |
| Default: | 0.0         | Change:    | Unchangeable |

**Value Range:**

0.0s–429496729.5s

**Description**

-

## 4.13 H0C Fault and Protection Parameters 2

### H0C.53 Probe DI ON compensation time 2

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200C-36h | Effective mode: | Real time |
| Min.:    | -3000    | Unit:           | 25ns      |
| Max.:    | 3000     | Data Type:      | Int16     |
| Default: | 200      | Change:         | Real-time |

**Value Range:**

-3000–3000

**Description**

Used to compensate for the action time when touch probe 2 is switched on.  
(Effective when H0A\_40 bit4 = 1)

### H0C.54 Probe DI OFF compensation time 2

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200C-37h | Effective mode: | Real time |
| Min.:    | -3000    | Unit:           | 25ns      |
| Max.:    | 3000     | Data Type:      | Int16     |
| Default: | 1512     | Change:         | Real-time |

**Value Range:**

-3000–3000

**Description**

Used to compensate for the action time when touch probe 2 is switched off.  
(Effective when H0A\_40 bit4 = 1)

### H0C.71 Internal function switch

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200C-48h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 65535    | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | Real-time              |

**Value Range:**



0–65535

**Description**

bit9: FPGA encoder feedback overspeed point hide switch

## 4.14 H0d Auxiliary Parameters

### H0d.00

**Software Reset**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-01h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: No operation

1: Enable

**Description**

Programs in the drive are reset automatically (similar to the program reset upon power-on) after the software reset function is enabled, without the need for a power cycle.

### H0d.01

**Fault Reset**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-02h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: No operation

1: Enable

**Description**

When a No. 1 or No. 2 resettable fault occurs, you can enable the fault reset function in the non-operational state after rectifying the fault cause, stopping the keypad from displaying the fault and allowing the drive to enter the "rdy" state.

When a No. 3 warning occurs, you can enable the fault reset function directly, regardless of the servo drive status.

### H0d.02

**Inertia auto-tuning enable**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 200d-03h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |

|          |    |            |           |
|----------|----|------------|-----------|
| Max.:    | 65 | Data Type: | UInt16    |
| Default: | 0  | Change:    | Real-time |

**Value Range:**

0–65

**Description**

Used to enable offline inertia auto-tuning through the keypad. In the parameter display mode, switch to H0d.02 and press the SET key to enable offline inertia auto-tuning.

**H0d.04 Read/write in encoder ROM**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-05h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 3        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: No operation

1: Write ROM

2: Read ROM

3: ROM failure

**Description**

For Inovance encoders, the USB and control circuit need to be disconnected after writing in ROM to activate parameters. Also ensure that the drive is powered on during parameter writing.

**H0d.05 Emergency stop**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-06h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: No operation

1: Emergency stop

**Description**

-

**H0d.06 Current loop auto-tuning test**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 200d-07h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |

|          |   |            |         |
|----------|---|------------|---------|
| Max.:    | 7 | Data Type: | UInt16  |
| Default: | 0 | Change:    | At stop |

**Value Range:**

0: No operation  
1: Enable current loop auto-tuning  
2: Enable current loop step test (static)  
3: Enable current loop step test

**Description**

0: No operation  
1: Enable current loop auto-tuning  
2: Enable current loop step test (static)  
3: Enable current loop step test

**H0d.10 Analog channel auto adjusting**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-0Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: No operation  
1: Adjusted through AI1  
2: Adjusted through AI2

**Description**

When automatic adjustment of the analog channel is enabled, the drive automatically corrects the zero drift voltage of the analog channel to improve signal detection accuracy.

**H0d.12 Phase U/V current balance correction**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200d-0Dh | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Disabled  
1: Enabled

**Description**

-

**H0d.17      Forced DI/DO enable switch**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-12h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 3        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

bit0: Forced DI enable switch

0: Disabled

1: Enabled

bit1: Forced DO enable switch

0: Disabled

1: Enabled

**Description**

Forced DI/DO selection.

**H0d.18      Forced DI value**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-13h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 31       | Data Type:      | UInt16    |
| Default: | 31       | Change:         | Real-time |

**Value Range:**

0–31

**Description**

Defines whether the DI functions set in group H03 is active when forced DI is activated (H0d.17 = 1 or 3).

The value of H0d.18 is displayed as a hexadecimal on the keypad. When it is converted to a binary value, "bit(n) = 1" indicates the level logic of DI function is high level; "bit(n) = 0" indicates the level logic of the DI function is low level.

**H0d.19      Forced DO value**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-14h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 3        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–3

**Description**

Defines whether the DO functions assigned in group H04 are active when forced DO is active (H0d.17 = 2 or 3).

The value of H0d.19 is displayed as a hexadecimal on the keypad. When it is converted to a binary value, "bit(n) = 1" indicates the DO function is active; "bit(n) = 0" indicates the DO function is inactive.

**H0d.20 Absolute encoder reset**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-15h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 4        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: No operation

1: Reset fault

2: Reset fault and multi-turn data

3: Reset Inovance 2nd encoder fault

4: Reset Inovance 2nd encoder fault and multi-turn data

**Description**

You can reset the encoder error or the multi-turn data fed back by the encoder by setting H0d.20.

**H0d.21 Read error status bit of Nikon and ENdat2.2 encoders**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-16h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: No operation

1: Reading error status bit

**Description**

Used to read the error status bit of Nikon encoder and ENDAT encoder.

**H0d.29 Motor parameter auto-tuning**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200d-1Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: No operation

1: Enabled

### Description

Resistor inductance auto-tuning.

## 4.15 H0E Communication Function Parameters

### H0E.00

#### Node address

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200E-01h | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 127      | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

#### Value Range:

1–127

#### Description

CAN Indicates the slave node address. Ensure this parameter is consistent with the configuration of the host controller.

### H0E.01

#### Save objects written through communication to e2prom

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200E-02h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 4        | Data Type:      | UInt16    |
| Default: | 4        | Change:         | Real-time |

#### Value Range:

0: Not save

1: Save parameters written through communication to e2prom

2: Save object dictionaries written through communication to e2prom

3: Save parameters and object dictionaries written through communication to e2prom

4: Save object dictionaries written before communication (OP) to e2prom

#### Description

You can use this parameter to select a data saving operation when parameters and object dictionaries are written through a serial port or SDO.

### H0E.07

#### Object dictionary unit selection

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 200E-08h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |

|          |   |            |         |
|----------|---|------------|---------|
| Max.:    | 1 | Data Type: | UInt16  |
| Default: | 0 | Change:    | At stop |

**Value Range:**0: Reference unit system (p/s, p/s<sup>2</sup>)

1: User unit system (0.01 [mm/s]/[rpm], ms)

**Description**

Servo unit system switching:

0: Use reference unit system. The speed type dictionary unit is p/s, and the acceleration type object dictionary is p/s<sup>2</sup>.

1: User unit system, 0.01 [mm/s]/[rpm] for speed type object dictionaries and ms (time taken for changing from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm]) for acceleration type object dictionaries.

**H0E.15      Select group 6000 index (last 2 bits)**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200E-10h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 255      | Data Type:      | UInt16    |
| Default: | 255      | Change:         | Real-time |

**Value Range:**

0–255

**Description**

Sets the index.

**H0E.16      Select group 6000 sub-index**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200E-11h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–2

**Description**

Sets the sub-index.

**H0E.20      EtherCAT slave name**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200E-15h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0E.21****EtherCAT slave alias**

Hex: 200E-16h

Effective mode: Upon the next power-on

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0–65535

**Description**

-

**H0E.22****Number of synchronous loss events allowed by EtherCAT**

Hex: 200E-17h

Effective mode: Real time

Min.: 1

Unit: -

Max.: 20

Data Type: UInt16

Default: 8

Change: Real-time

**Value Range:**

1–20

**Description**

-

**H0E.24****Sync loss count**

Hex: 200E-19h

Effective mode: -

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: Unchangeable

**Value Range:**

0–65535

**Description**

-

**H0E.25****Max. error value and invalid frames of EtherCAT port 0 per unit time**

Hex: 200E-1Ah

Effective mode: -

mode:



|          |       |            |              |
|----------|-------|------------|--------------|
| Min.:    | 0     | Unit:      | -            |
| Max.:    | 65535 | Data Type: | UInt16       |
| Default: | 0     | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0E.26 Max. error value and invalid frames of EtherCAT port 1 per unit time**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200E-1Bh | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0E.27 Max. transfer error of EtherCAT port per unit time**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200E-1Ch | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0E.28 Max. EtherCAT data frame processing unit error per unit time**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200E-1Dh | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 255      | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–255

**Description**

-

**H0E.29 Max. link loss value of EtherCAT port 0 per unit time**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200E-1Eh | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0E.31 EtherCAT synchronization mode setting**

|          |          |            |                        |
|----------|----------|------------|------------------------|
| Hex:     | 200E-20h | Effective  | Upon the next power-on |
|          |          | mode:      |                        |
| Min.:    | 0        | Unit:      | -                      |
| Max.:    | 3        | Data Type: | UInt16                 |
| Default: | 2        | Change:    | At stop                |

**Value Range:**

0–3

**Description**

-

**H0E.32 EtherCAT synchronization error threshold**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 200E-21h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 100      | Unit:      | ns        |
| Max.:    | 8000     | Data Type: | UInt16    |
| Default: | 4000     | Change:    | At stop   |

**Value Range:**

100 ns to 8000 ns

**Description**

-

**H0E.33 EtherCAT state machine status and port connection status**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200E-22h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0E.34 Excessive CSP position command increment count**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200E-23h | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 30       | Data Type:      | UInt16    |
| Default: | 20       | Change:         | Real-time |

**Value Range:**

1–30

**Description**

-

**H0E.35 AL fault code**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200E-24h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0E.36 EtherCAT enhanced link enable**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200E-25h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | Real-time              |

**Value Range:**

0: Disabled

1: Enabled

**Description**

-

**H0E.37 EtherCAT XML reset selection**

|       |          |                 |                        |
|-------|----------|-----------------|------------------------|
| Hex:  | 200E-26h | Effective mode: | Upon the next power-on |
| Min.: | 0        | Unit:           | -                      |
| Max.: | 1        | Data Type:      | UInt16                 |

Default: 0

Change: Real-time

**Value Range:**

0: Disabled

1: Enabled

**Description**

-

**H0E.80****Modbus baud rate**

Hex: 200E-51h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 9

Data Type: UInt16

Default: 9

Change: Real-time

**Value Range:**

0: 300 bps

1: 600 bps

2: 1200 bps

3: 2400 bps

4: 4800 bps

5: 9600 bps

6: 19200 bps

7: 38400 bps

8: 57600 bps

9: 115200 bps

**Description**

Defines the communication rate between the servo drive and the host controller. The baud rate set in the servo drive must be the same as that in the host controller. Otherwise, communication will fail.

**H0E.81****Modbus data format**

Hex: 200E-52h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 3

Data Type: UInt16

Default: 3

Change: Real-time

**Value Range:**

0: No parity, 2 stop bits (N-2)

1: Even parity, 1 stop bit (E-1)

2: Odd parity, 1 stop bit (O-1)

3: No parity, 1 stop bit (N-1)

**Description**

Defines the data check mode between the servo drive and the host controller during communication.

0: No parity, 2 stop bits

1: Even parity, 1 stop bit

2: Odd parity, 1 stop bit

3: No parity, 1 stop bit

The data format of the servo drive must be the same as that of the host controller. Otherwise, communication will fail.

**H0E.82 Modbus response delay**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200E-53h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 20       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 ms to 20 ms

**Description**

Defines the delay from the moment when the slave receives a command from the host controller to the moment when the slave returns a response.

**H0E.83 Modbus communication timeout**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200E-54h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 600      | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 ms to 600 ms

**Description**

-

**H0E.84 Sequence of Modbus communication data bits**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200E-55h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

0: High bits before low bits

1: Low bits before high bits

**Description**

Defines the 32-bit data transmission format of Modbus communication.

0: High 16 bits before low 16 bits

1: Low 16 bits before high 16 bits

**H0E.90****Communication version**

Hex: 200E-5Bh

Effective -

mode:

Min.: 0.00

Unit: -

Max.: 655.35

Data Type: UInt16

Default: 0.00

Change: Unchangeable

**Value Range:**

0.00–655.35

**Description**

-

**H0E.96****XML version information**

Hex: 200E-61h

Effective -

mode:

Min.: 0.00

Unit: -

Max.: 655.35

Data Type: UInt16

Default: 0.00

Change: Unchangeable

**Value Range:**

0.00–655.35

**Description**

-

**4.16 H0F Fully Closed-Loop****H0F.00****Encoder feedback mode**

Hex: 200F-01h

Effective Upon the next power-on

mode:

Min.: 0

Unit: -

Max.: 2

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Internal encoder feedback

1: External encoder feedback

2: Inner/Outer loop switchover

**Description**

Defines the encoder feedback signal source in fully closed-loop control.

0: Internal encoder feedback. The position feedback signals come from the motor encoder.

1: External encoder feedback The position feedback signals come from the fully closed-loop external encoder and electronic gear ratio 1 is used.

2: Inner/Outer loop switchover: The DI assigned with FunIN.24 (GEAR\_SEL, electronic gear ratio switchover) is switch between inner and outer position closed loops.

DI function: disabled, internal encoder feedback, with electronic gear ratio 1 used

Enabled, external encoder feedback, with electronic gear ratio 2 used

### Note

To switch between inner and outer loops, you need to set H0F.00 to 2, rather than changing it to 0 or 1 in realtime.

## H0F.01 Fully closed-loop encoder application mode

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-02h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | Real-time              |

### Value Range:

0: Standard operating direction

1: Reverse operating direction

### Description

Defines the feedback pulse counting direction of internal and external encoders when the motor rotates in the fully closed-loop mode.

0: Standard operating direction: The pulse feedback counter of the internal encoder (H0F.18) is in the same direction as that of the external encoder (H0F.20) during rotation of the motor.

1: Reverse operating direction: The pulse feedback counter of the internal encoder (H0F.18) is in the opposite direction as that of the external encoder (H0F.20) during rotation of the motor.

## H0F.02 Fully closed-loop encoder absolute value

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-03h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Incremental mode

1: Absolute linear mode

**Description**

-

**H0F.03****Fully closed-loop encoder feedback type**

Hex: 200F-04h

Effective mode: Upon the next power-on

Min.: 0

Unit: -

Max.: 4

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0: Quadrature pulse

1: Inovance

2: BiSS-C

3: ENDAT2.2

4: SSI

**Description**

-

**H0F.04****Number of fully closed-loop encoder pulses per revolution**

Hex: 200F-05h

Effective mode: Upon the next power-on

Min.: 1

Unit: -

Max.: 2147483647

Data Type: UInt32

Default: 10000

Change: At stop

**Value Range:**

1–2147483647

**Description**

Defines the pulses fed back by the external encoder per revolution of the motor. It defines the quantity relation between feedback pulses from the external encoder and those from the internal encoder.

Calculate the value of this parameter through analyzing mechanical parameters. When rigid connection is applied between the motor and the external encoder (scale), you can also set this parameter using the following method:



1. Manually rotate the motor and observe H0F.18 (Feedback pulse counter of internal encoder) in the meantime. After ensuring that the motor has rotated for a full turn (H0F.18 = Motor resolution), calculate the change of H0F.20 (Feedback pulse counter of external encoder) and use the absolute value of the change as the value of H0F.04.

2. Assume values of H0F.18 and H0F.20 are X1 and Y1 before the motor rotates and X2 and Y2 after the motor rotates, then the following formula applies:  

$$\text{H0F.04} = \text{Motor resolution} \times (Y2 - Y1) / (X2 - X1)$$
 The calculated result must be positive; if not, perform step 1 again.

For non-rigid connection, an error may exist in the calculation result.

Note:

Ensure H0F.04 is set properly. Otherwise, EB02.0 (Position deviation too large in fully closed loop) may occur after the drive operates.

### H0F.06 Fully closed-loop encoder interface

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-07h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | Int16                  |
| Default: | 1        | Change:         | At stop                |

#### Value Range:

0: CN2

1: CN7

#### Description

Used to set the drive interface used by the fully closed-loop encoder.

### H0F.08 Excessive deviation threshold in compound control mode

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 200F-09h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 2147483647 | Data Type:      | UInt32    |
| Default: | 1000       | Change:         | Real-time |

#### Value Range:

0–2147483647

#### Description

Defines the position deviation threshold at which the servo drive reports EB02.0 (Position deviation too large in fully closed-loop mode).

When H0F.08 is set to 0, the drive does not detect EB02.0 and always clears the fully closed-loop position deviation.

**H0F.10 Clear deviation in compound control mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200F-0Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | Rev       |
| Max.:    | 100      | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

0 Rev to 100 Rev

**Description**

Defines the number of revolutions rotated by the motor per a clear of the fully closed-loop position deviation during operation. The number of revolutions is reflected by H0F.18 (Feedback pulse counter of internal encoder). The number of motor revolutions will not be cleared when the drive is not in the operational state.

**H0F.13 Compound vibration suppression filter time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200F-0Eh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | ms        |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | At stop   |

**Value Range:**

0.0 ms to 6553.5 ms

**Description**

Defines the time constant for compound vibration suppression in fully closed-loop control when external encoder feedback (H0F.00 = 1 or 2) is used.

Increase the setpoint gradually and check the response change.

When the stiffness of the transmission mechanism between fully closed loop and internal loop is insufficient, set H0F.13 properly to improve system stability, which is to generate the effect of internal loop temporarily and form a fully closed loop again after the system is stabilized. When the stiffness is sufficient, there is no need to adjust this parameter.

**H0F.16 Pulse deviation display in compound control mode**

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 200F-11h    | Effective mode: | -            |
| Min.:    | -2147483648 | Unit:           | Encoder unit |
| Max.:    | 2147483647  | Data Type:      | Int32        |
| Default: | 0           | Change:         | Unchangeable |

**Value Range:**

-2147483648 to 2147483647

**Description**

Used to count and display the position deviation absolute value in fully closed loop control.

Pulse deviation in compound control = Absolute position feedback of external encoder - Absolute position feedback conversion value of internal encoder.

The alignment of inner and outer loop feedbacks is performed each time the deviation is cleared.

#### **H0F.18 Internal position pulse feedback display**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 200F-13h    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | -2147483648 | Unit:      | Encoder unit |
| Max.:    | 2147483647  | Data Type: | Int32        |
| Default: | 0           | Change:    | Unchangeable |

##### **Value Range:**

-2147483648 to 2147483647

##### **Description**

Used to count and display the number of feedback pulses of the internal encoder (after being divided or multiplied by electronic gear ratio, in internal encoder unit).

#### **H0F.20 Fully closed-loop encoder position pulse feedback display**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 200F-15h    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | -2147483648 | Unit:      | Encoder unit |
| Max.:    | 2147483647  | Data Type: | Int32        |
| Default: | 0           | Change:    | Unchangeable |

##### **Value Range:**

-2147483648 to 2147483647

##### **Description**

Used to count and display the number of feedback pulses of the external encoder (after being divided or multiplied by electronic gear ratio, in external encoder unit).

#### **H0F.22 Quadrature pulse phase Z detection invalid in fully closed-loop mode**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 200F-17h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 1        | Data Type: | UInt16    |
| Default: | 0        | Change:    | Real-time |

##### **Value Range:**

0: Detected

1: Not detected

**Description**

-

**H0F.23 BISSC/SSI/EDNAT2.2 full closed-loop encoder absolute homing offset**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 200F-18h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

The homing offset is automatically updated after homing is completed, and is automatically aligned with H05.36. It is only necessary to write this value manually when you replace the drive. When the full closed-loop encoder is in absolute linear mode, the power-on initial position = Encoder position feedback original value + Homing offset – Absolute feedback offset

**H0F.25 Set the source of touch probe Z signal in fully closed-loop mode.**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 200F-1Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Motor Z signal

1: External feedback Z signal

**Description**

-

**H0F.26 BISSC/SSI/EDNAT2.2 full closed-loop encoder absolute feedback offset**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 200F-1Bh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

When the full closed-loop encoder is in absolute linear mode, the absolute feedback offset is updated after homing is completed. It is only necessary to write this value manually when you replace the drive.

**H0F.28 Index value of BiSS/SSI communication alarm**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200F-1Dh | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H0F.29 CRC of BiSS-C/SSI fully closed-loop encoder feedback**

|          |          |            |                        |
|----------|----------|------------|------------------------|
| Hex:     | 200F-1Eh | Effective  | Upon the next power-on |
|          |          | mode:      |                        |
| Min.:    | 0        | Unit:      | -                      |
| Max.:    | 1        | Data Type: | UInt16                 |
| Default: | 1        | Change:    | Real-time              |

**Value Range:**

0: Positive

1: Negative

**Description**

-

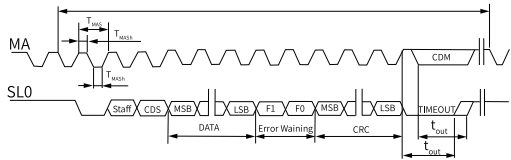
**H0F.30 BiSS-C/SSI/EDNAT2.2 valid bits of encoder communication position feedback in full closed-loop mode**

|          |          |            |                        |
|----------|----------|------------|------------------------|
| Hex:     | 200F-1Fh | Effective  | Upon the next power-on |
|          |          | mode:      |                        |
| Min.:    | 0        | Unit:      | -                      |
| Max.:    | 127      | Data Type: | UInt16                 |
| Default: | 29       | Change:    | At stop                |

**Value Range:**

0–127

### Description



- DATA: position data    CRC: 6-bit CRC code
- $100\text{ns} \leq T_{\text{MAS}} \leq 2t_{\text{out}}$      $25\text{ns} \leq T_{\text{MASH}} \leq t_{\text{out}}$      $25\text{ns} \leq T_{\text{MASH}} \leq t_{\text{out}}$
- $t_{\text{out}} = 1.5 \text{MA clock period}$
- MA : master clock output; SLO: slave data output transmission speed up to 10 Mbps.
- CDM: register communication master transmit bit; CDS: register communication slave return bit
- Error Warning: error and warning bits index (F1 low level indicates an error, F0 low level indicates an alarm)
- Scale input and output complies with RS-422A The differential line drive and line receiver are required.
- CRC generator polynomial:  $X^6+X^1+1$ , initial value 0, range "DATA", "Error Warning". In the figure, MA SLO are not shown.

H0F.30 is the valid bits of position feedback. For details, see the user manual of any third-party BiSS-C encoder.

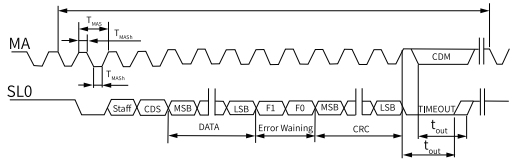
### H0F.31    Valid bit of BiSS-C/SSL encoder communication alarm index in full closed-loop mode

|          |          |            |                              |
|----------|----------|------------|------------------------------|
| Hex:     | 200F-20h | Effective  | Upon the next power-on mode: |
| Min.:    | 0        | Unit:      | -                            |
| Max.:    | 31       | Data Type: | UInt16                       |
| Default: | 2        | Change:    | At stop                      |

#### Value Range:

0–31

### Description



- DATA: position data    CRC: 6-bit CRC code
- $100\text{ns} \leq T_{\text{MAS}} \leq 2t_{\text{out}}$      $25\text{ns} \leq T_{\text{MASH}} \leq t_{\text{out}}$      $25\text{ns} \leq T_{\text{MASH}} \leq t_{\text{out}}$
- $t_{\text{out}} = 1.5 \text{MA clock period}$
- MA : master clock output; SLO: slave data output transmission speed up to 10 Mbps.
- CDM: register communication master transmit bit; CDS: register communication slave return bit
- Error Warning: error and warning bits index (F1 low level indicates an error, F0 low level indicates an alarm)
- Scale input and output complies with RS-422A The differential line drive and line receiver are required.
- CRC generator polynomial:  $X^6+X^1+1$ , initial value 0, range "DATA", "Error Warning". In the figure, MA SLO are not shown.

H0F.31: Error Warning set bit, error and alarm bit index. Its value is the difference between DATA and CRC.

**H0F.32 BiSS-C/SSI/ENDAT encoder communication frequency in fully closed-loop mode**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-21h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | kHz                    |
| Max.:    | 10000    | Data Type:      | UInt16                 |
| Default: | 2000     | Change:         | Real-time              |

**Value Range:**

0 kHz–10000 kHz

**Description**

-

**H0F.33 SSI/ENDAT encoder recovery time in fully closed-loop mode**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-22h | Effective mode: | Upon the next power-on |
| Min.:    | 0.000    | Unit:           | us                     |
| Max.:    | 40.000   | Data Type:      | UInt16                 |
| Default: | 0.500    | Change:         | Real-time              |

**Value Range:**

0.000us to 40.000us

**Description**

-

**H0F.35 BiSS-C error detection enable in fully closed-loop mode**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-24h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Detection on error bits of BiSS-C protocol by FPGA software.

**H0F.36 BiSS-C error bit polarity in fully closed-loop mode**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-25h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Positive

1: Negative

**Description**

Error bit polarity of BISS-C protocol.

**H0F.40 Communication error register in full closed-loop mode**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200F-29h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

-

Table 4-1 Inovance encoder

| bit               | Name                                                                             |
|-------------------|----------------------------------------------------------------------------------|
| 0                 | Full closed-loop serial encoder communication timeout (RX side) <sup>[1]</sup>   |
| 1                 | Full closed-loop serial encoder frame stop bit error (RX side)                   |
| 2                 | Full closed-loop serial encoder CRC error (RX side) <sup>[2]</sup>               |
| 3                 | Full closed-loop serial encoder data field error (RX side)                       |
| 4                 | Full closed-loop serial encoder position count error (TX side) <sup>[1]</sup>    |
| 5                 | Full closed-loop serial encoder frame overspeed (TX side)                        |
| 6                 | Full closed-loop serial encoder over-temperature (TX side)                       |
| 7                 | Full closed-loop serial encoder single-turn count error (TX side)                |
| 8                 | Full closed-loop serial encoder multi-turn count error (TX side)                 |
| 9                 | Full closed-loop serial encoder battery alarm (TX side)                          |
| 10                | Full closed-loop serial encoder battery failure (TX side)                        |
| 11–12             | Undefined                                                                        |
| 13 <sup>[3]</sup> | Full closed-loop serial encoder count increment error (algorithm) <sup>[1]</sup> |
| 14–15             | Undefined                                                                        |
| 16–23             | Full closed-loop serial encoder expansion data 1                                 |
| 24–31             | Full closed-loop serial encoder expansion data 2                                 |



Table 4-2 EnDat encoder

| bit               | Name                                                              |
|-------------------|-------------------------------------------------------------------|
| 0                 | EnDat encoder communication timeout (RX side)                     |
| 1                 | EnDat level 1 fault (RX side)                                     |
| 2                 | EnDat encoder CRC error (RX side) <sup>[2]</sup>                  |
| 3                 | EnDat level 2 fault (RX side)                                     |
| 4                 | EnDat fault information 1 (TX side)                               |
| 5                 | EnDat fault information 2 (TX side)                               |
| 6-8               | Undefined                                                         |
| 9                 | EnDat additional data 1 CRC error                                 |
| 10                | EnDat additional data 2 CRC error                                 |
| 11-12             | Undefined                                                         |
| 13 <sup>[3]</sup> | Full closed-loop serial encoder count increment error (algorithm) |
| 14                | EnDat level 3 fault (RX side)                                     |
| 15                | EnDat level 3 fault (RX side)                                     |
| 16-23             | Full closed-loop serial encoder expansion data 1                  |
| 24-31             | Full closed-loop serial encoder expansion data 2                  |

Table 4-3 BiSS-C and SSI encoders

| bit                     | Name                                                               |
|-------------------------|--------------------------------------------------------------------|
| 0                       | Full closed-loop serial encoder communication timeout (RX side)    |
| 1                       | Undefined                                                          |
| 2                       | Full closed-loop serial encoder CRC error (RX side) <sup>[2]</sup> |
| 3-10                    | Undefined                                                          |
| 7                       | Full closed-loop serial encoder single-turn count error (TX side)  |
| 11-12                   | Undefined                                                          |
| 13 <sup>[3]</sup>       | Full closed-loop serial encoder count increment error (algorithm)  |
| 14-15                   | Undefined                                                          |
| 16 to 23 <sup>[4]</sup> | Full closed-loop serial encoder expansion data 1                   |
| 24 to 31 <sup>[4]</sup> | Full closed-loop serial encoder expansion data 2                   |

## Note

[1]: In the above table, the RX side refers to the drive and the TX side refers to the motor encoder. The algorithm refers to the type of the indirect error caused by a direct error on the RX or TX side.

[2]: When a BiSS-C encoder is used: 1-CRC error; 0-CRC is normal. When an SSI encoder is used: 1-Parity error; 0-Parity is normal.

[3]: When H0A.50 or more data transmission errors occur continuously, bit13 will be set to 1 and the drive must be stopped. For other error types, you can stop the drive as needed.

[4]: Full closed-loop serial encoder extended data 1/2 (when a BiSS-C encoder is used): This part is the status word of BiSS-C and SSI encoders.

### H0F.41 Inovance fully closed-loop encoder version

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 200F-2Ah | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0.0      | Unit:      | -            |
| Max.:    | 6553.5   | Data Type: | UInt16       |
| Default: | 0.0      | Change:    | Unchangeable |

#### Value Range:

0.0–6553.5

#### Description

-

### H0F.42 Inovance fully closed-loop encoder resolution

|          |            |            |              |
|----------|------------|------------|--------------|
| Hex:     | 200F-2Bh   | Effective  | -            |
|          |            | mode:      |              |
| Min.:    | 0          | Unit:      | -            |
| Max.:    | 4294967295 | Data Type: | UInt32       |
| Default: | 0          | Change:    | Unchangeable |

#### Value Range:

0–4294967295

#### Description

-

### H0F.45 Positioning completed/Position deviation threshold in fully closed-loop mode

|       |          |            |           |
|-------|----------|------------|-----------|
| Hex:  | 200F-2Eh | Effective  | Real time |
|       |          | mode:      |           |
| Min.: | 0        | Unit:      | -         |
| Max.: | 1        | Data Type: | UInt16    |

Change: At stop

**Value Range:**

0: Threshold scaled to outer loop unit

1: Same threshold used for inner and outer loops

### Description

0: Fully closed-loop positioning completed threshold 6067/Excessive position deviation threshold 6065 (scaled to outer loop unit)

1: Same threshold used for inner and outer loops

#### H0F.46 Fully closed-loop speed feedback selection

Effective      Real time

mode:

Unit: -

Data Type: UInt16

Change: At stop

**Value Range:**

0: Internal encoder feedback

### 1: External encoder feedback

### Description



### H0F.51 SSI encoder check bit selection in fully closed-loop mode

Effective      Upon the next power-on

mode:

Unit: -

Data Type: UInt16

Change: At stop

**Value Range:**

0: No check

1: Check applied

### Description

—

## H0F.52 SSI encoder code system in full closed-loop mode

Effective      Upon the next power-on

mode:

Unit: -

Data Type: UInt16

Change: At stop

**Value Range:**

0: Binary

1: Gray code

**Description**

-

**H0F.53 SSI state word code system in fully closed-loop mode**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-36h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 1        | Change:         | At stop                |

**Value Range:**

0: Binary

1: Gray code

**Description**

-

**H0F.54 SSI encoder parity check in fully closed-loop mode**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 200F-37h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Disabled

1: Enabled

**Description**

-

**H0F.55 Fully closed-loop encoder communication timeout error count**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200F-38h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Fully closed-loop encoder communication timeout error count

**H0F.56 Encoder CRC error count in fully closed-loop mode**

|      |          |                 |   |
|------|----------|-----------------|---|
| Hex: | 200F-39h | Effective mode: | - |
|------|----------|-----------------|---|

|          |       |            |              |
|----------|-------|------------|--------------|
| Min.:    | 0     | Unit:      | -            |
| Max.:    | 65535 | Data Type: | UInt16       |
| Default: | 0     | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

Encoder CRC error count in fully closed-loop mode

**H0F.57 Fully closed-loop encoder communication frame stop bit error count**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 200F-3Ah | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Fully closed-loop encoder communication frame stop bit error count.

## 4.17 H11 Multi-position

**H11.00 Multi-position running mode**

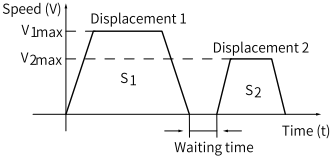
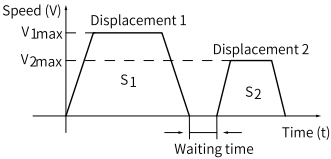
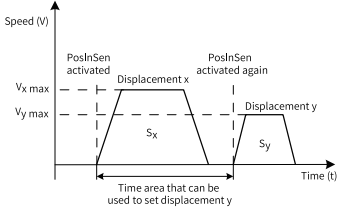
|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-01h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 5        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

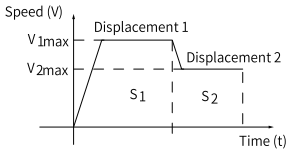
**Value Range:**

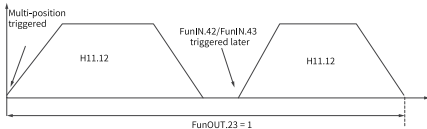
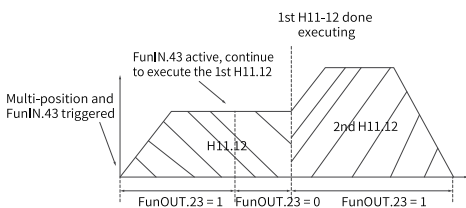
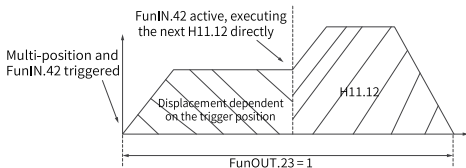
- 0: Single run (number of displacements selected in H11.01)
- 1: Cyclic operation (number of displacement selected in H11.01)
- 2: DI-based operation (selected by DI)
- 3: Sequential operation
- 5: Axis-controlled continuous operation

**Description**

Defines the multi-position operation mode when the main position reference source is multi-position references (H05.00 = 2) in the position control mode.

| Value | Operation Mode       | Remarks                                                                                                                                                                                                                                                                                         | Operation Curve                                                                                                                                                                                                                                                                     |
|-------|----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0     | Individual operation | <p>The drive stops after one cycle of operation.</p> <p>The drive automatically switches to the next speed.</p> <p>You can set the interval time between displacements.</p> <p>The multi-position reference is level-triggered.</p>                                                             |  <p><math>V_{1max}</math>, <math>V_{2max}</math> : maximum operating speeds in displacement 1 and displacement 2</p> <p><math>S_1</math>, <math>S_2</math> : displacement 1 and displacement 2</p> |
| 1     | Cyclic operation     | <p>The starting displacement after the first cycle is displacement 1.</p> <p>The drive automatically switches to the next speed.</p> <p>You can set the interval time between displacements.</p> <p>The multi-position reference is level-triggered.</p>                                        |  <p><math>V_{1max}</math>, <math>V_{2max}</math> : maximum operating speeds in displacement 1 and displacement 2</p> <p><math>S_1</math>, <math>S_2</math> : displacement 1 and displacement 2</p> |
| 2     | DI-based operation   | <p>The drive continues operating when the displacement No. is updated.</p> <p>The speed No. is determined by the DI logic.</p> <p>The interval time between displacements is determined by the command delay of the host controller.</p> <p>The multi-position reference is edge-triggered.</p> |  <p><math>V_{xmax}</math>, <math>V_{ymax}</math> : maximum operating speeds in displacement x and displacement y</p> <p><math>S_x</math>, <math>S_y</math> : displacement x and displacement y</p> |

| Value | Operation Mode       | Remarks                                                                                                                                                                                                                                                                                                      | Operation Curve                                                                                                                                                                                                                        |
|-------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3     | Sequential operation | <p>The drive stops after one cycle of operation.</p> <p>The starting displacement after the first cycle is defined by H11.05.</p> <p>The drive automatically switches to the next speed.</p> <p>There is no interval time between displacements.</p> <p>The multi-position reference is level-triggered.</p> | <div><p>V 1max , V 2max : maximum operating speeds in displacement 1 and displacement 2</p><p>S 1 , S 2 : displacement 1 and displacement 2</p></div> |

| Value | Operation Mode                       | Remarks                                                                                                                                                                                                                                         | Operation Curve                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5     | Axis-controlled continuous operation | <p>The drive executes one displacement only.</p> <p>The individual operation mode, sequential operation mode, and interrupted operation mode are included.</p> <p>The PosInSen (multi-position reference enable) signal is level-triggered.</p> | <p>● Individual operation</p>  <p>The PosInSen (multi-position reference enable) signal is triggered only once (FunIN.43/42 triggered later). The drive stops after executing the distance defined by H11.12.</p> <p>● Sequential operation</p>  <p>The PosInSen (multi-position reference enable) signal is triggered only once. Write H11.12 again and activate FunIN.43 when the distance defined by the first H11.12 is still in progress. After receiving the new distance (or speed), which is the second H11.12, the drive continues executing the first H11.12 until the distance defined by the first H11.12 is done. Then it starts to execute the second H11.12 directly. The travel distance therefore is the sum of the first H11.12 and the second H11.12.</p> <p>● Interrupted operation</p>  <p>The PosInSen (Multi-position reference enable) signal is triggered only once. Write H11.12 (such as 1000000) again and activate FunIN.42 when the first H11.12 (such as 9000000) is still in progress. After receiving the new distance (or speed), which is the second H11.12, the drive stops executing the first H11.12 and turns to executing the second H11.12.</p> |

To use the multi-position function, assign FunIN.28 (PosInSen, multi-position reference enable) to a DI first. See "Group H03: Terminal input parameters" for the setting mode.



The positioning completed (COIN) signal is activated each time upon completion of a displacement. To determine whether a certain displacement is done executing, use FunOUT.5 (COIN, positioning completed). See "Group H04: Terminal output parameters" for details.

Ensure the S-ON signal is active during operation of each displacement. Otherwise, the drive stops immediately as defined by H02.05 (Stop mode at S-ON OFF) and the positioning completed (COIN) signal is inactive. In modes other than DI-based operation, if the S-ON signal is active but multi-position is disabled during operation of a certain displacement, the drive abandons the unsent displacement reference and stops, with the positioning completed (COIN) signal being active. If the multi-position function is enabled again, the displacement to be executed is defined by H11.02.

### **H11.01      Number of displacement references in multi-position mode**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-02h | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 16       | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

#### **Value Range:**

1–16

#### **Description**

Defines the total number of displacement references in the multi-position mode. You can set different displacements, operating speeds, and acceleration/ deceleration time for each displacement.

H11.00  $\neq$  2: Displacements are switched automatically in a sequence from 1, 2... H11.01.

H11.00 is 2: Assign four DIs (Hardware DI or VDI) with DI functions 6 to 9 (FunIN.6: CMD1 to FunIN.9: CMD4) and control the DI logic through the host controller to switch between different speeds. The segment No. is a 4-bit binary value. Bits 0 to 3 correspond to CMD1 to CMD4.

The displacement No. is a 4-bit binary value. The relationship between the displacement numbers and CMD1...CMD4 is shown in the following table.

| FunIN.9<br>CMD4 | FunIN.8<br>CMD3 | FunIN.7<br>CMD2 | FunIN.6<br>CMD1 | Segment No. |
|-----------------|-----------------|-----------------|-----------------|-------------|
| 0               | 0               | 0               | 0               |             |
| 0               | 0               | 0               | 1               | 2           |
| ...             |                 |                 |                 |             |
| 1               | 1               | 1               | 1               | 16          |

### **H11.02      Starting displacement No. after pause**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2011-03h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |   |            |         |
|----------|---|------------|---------|
| Min.:    | 0 | Unit:      | -       |
| Max.:    | 1 | Data Type: | UInt16  |
| Default: | 0 | Change:    | At stop |

**Value Range:**

0: Continue to execute the unexecuted displacements

1: Start from displacement 1

**Description**

Defines the starting displacement No. when the multi-position operation recovers from a pause.

Pause:

1. The servo drive switches to another control mode or the interrupt positioning function is enabled during multi-position operation.

2. The internal multi-position enable signal (FunIN.28:PosInSen) changes from "active" to "inactive".

0: Continue to execute the unexecuted displacements: For example, if H11.01 is set to 16 and the drive pauses at displacement 2, after the drive recovers from the pause, it will start from displacement 3.

1: Start from displacement 1: For example, if H11.01 is set to 16 and the drive pauses at displacement 2, after the drive recovers from the pause, it will start from displacement 1.

**H11.03****Interval time unit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-04h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: ms

1: s

**Description**

Defines the unit of acceleration/deceleration time and the interval time during multi-position operation.

Acceleration/Deceleration time: Indicates the time taken for the motor to change from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm] at a constant speed.

Interval time: interval time that starts from the end of the last reference to the beginning of the next reference

**H11.04****Displacement reference type**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2011-05h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |

|          |   |            |           |
|----------|---|------------|-----------|
| Max.:    | 1 | Data Type: | UInt16    |
| Default: | 0 | Change:    | Real-time |

**Value Range:**

0: Relative displacement reference

1: Absolute displacement reference

**Description**

Relative displacement: position increment of the target position relative to the current motor position

Absolute displacement: position increment of the target position relative to the motor home.

**H11.05 Starting displacement No. in sequential operation**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-06h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 16       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–16

**Description**

Defines whether to perform cyclic operation and the starting displacement No. after the first cycle of operation in the sequential operation mode (H11.00 = 3).

0: The drive executes the displacements defined by H11.01 only once and then stops. The motor is in the locked state.

1 to 16: The drive operates cyclically, with the starting displacement No. defined by H11.05 after the first cycle of operation. The value of H11.05 should be lower than or equal to H11.01.

**H11.09 Deceleration upon axis control OFF**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-0Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 65535    | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.10 Starting speed of displacement 1**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2011-0Bh | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |      |            |              |
|----------|------|------------|--------------|
| Min.:    | 0    | Unit:      | [mm/s]/[rpm] |
| Max.:    | 6000 | Data Type: | UInt16       |
| Default: | 0    | Change:    | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–6000[mm/s]/[rpm]

**Description**

-

**H11.11 Stop speed of displacement 1**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2011-0Ch | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 6000     | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–6000[mm/s]/[rpm]

**Description**

-

**H11.12 Displacement 1**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2011-0Dh    | Effective mode: | Real time      |
| Min.:    | -1073741824 | Unit:           | Reference unit |
| Max.:    | 1073741824  | Data Type:      | Int32          |
| Default: | 10000       | Change:         | Real-time      |

**Value Range:**

-1073741824 to 1073741824

**Description**

Defines displacement 1 (reference unit) in multi-position operation.

**H11.14 Max. speed of displacement 1**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2011-0Fh | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 200      | Change:         | Real-time    |

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

Defines the maximum speed of displacement 1 in multi-position operation.  
 The maximum speed is the average operating speed when the motor is not in the acceleration/deceleration process. If H11.12 is set to a too low value, the actual motor speed will be lower than H11.14.

**H11.15 Acc/Dec time of displacement 1**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-10h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Defines the time for the motor to change from 0 [mm/s]/[rpm] to 1000 rpm[mm/s]/[rpm] at a constant speed during displacement 1.

Actual time needed for accelerating to H11.14 (Max. speed of displacement 1):

$$t = \frac{(H11.14) \times (H11.15)}{1000}$$

Note: The rigidity must be good, and the speed loop can follow the position command.

**H11.16 Interval time after displacement 1**

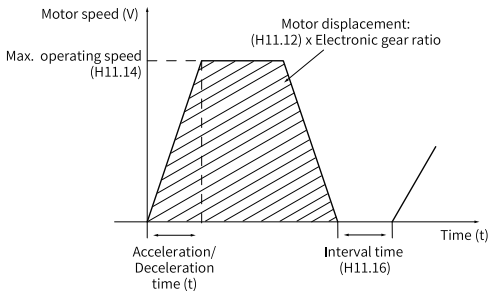
|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-11h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms (s)    |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms(s) to 10000 ms(s)

### Description

Defines the interval time that starts from the end of displacement 1 to the beginning of the next displacement.



### H11.17

#### Displacement 2

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2011-12h    | Effective mode: | Real time      |
| Min.:    | -1073741824 | Unit:           | Reference unit |
| Max.:    | 1073741824  | Data Type:      | Int32          |
| Default: | 10000       | Change:         | Real-time      |

#### Value Range:

-1073741824 to 1073741824

#### Description

-

### H11.19

#### Max. speed of displacement 2

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2011-14h | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 200      | Change:         | Real-time    |

#### Value Range:

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

#### Description

-

### H11.20

#### Acc/Dec time of displacement 2

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2011-15h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | ms        |
| Max.: | 65535    | Data Type:      | UInt16    |

Default: 10

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.21 Interval time after displacement 2**

Hex: 2011-16h

Effective mode: Real time

Min.: 0

Unit: ms (s)

Max.: 10000

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.22 Displacement 3**

Hex: 2011-17h

Effective mode: Real time

Min.: -1073741824

Unit: Reference unit

Max.: 1073741824

Data Type: Int32

Default: 10000

Change: Real-time

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.24 Max. speed of displacement 3**

Hex: 2011-19h

Effective mode: Real time

Min.: 1

Unit: [mm/s]/[rpm]

Max.: 10000

Data Type: UInt16

Default: 200

Change: Real-time

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.25 Acc/Dec time of displacement 3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-1Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.26 Interval time after displacement 3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-1Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms (s)    |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.27 Displacement 4**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2011-1Ch    | Effective mode: | Real time      |
| Min.:    | -1073741824 | Unit:           | Reference unit |
| Max.:    | 1073741824  | Data Type:      | Int32          |
| Default: | 10000       | Change:         | Real-time      |

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.29 Max. speed of displacement 4**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2011-1Eh | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 200      | Change:         | Real-time    |

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]



**Description**

-

**H11.30 Acc/Dec time of displacement 4**

Hex: 2011-1Fh

Effective Real time

mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.31 Interval time after displacement 4**

Hex: 2011-20h

Effective Real time

mode:

Min.: 0

Unit: ms (s)

Max.: 10000

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.32 Displacement 5**

Hex: 2011-21h

Effective Real time

mode:

Min.: -1073741824

Unit: Reference unit

Max.: 1073741824

Data Type: Int32

Default: 10000

Change: Real-time

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.34 Max. speed of displacement 5**

Hex: 2011-23h

Effective Real time

mode:

Min.: 1

Unit: [mm/s]/[rpm]

Max.: 10000

Data Type: UInt16

Default: 200

Change: Real-time

**Value Range:**

$$1[\text{mm/s}]/[\text{rpm}]-10000[\text{mm/s}]/[\text{rpm}]$$

### Description

—

**H11.35**      **Acc/Dec time of displacement 5**

Hex: 2011-24h

|           |           |
|-----------|-----------|
| Effective | Real time |
| mode:     |           |

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms to 65535 ms

### Description

—

**H11.36**      **Interval time after displacement 5**

Hex: 2011-25h

Effective      Real time  
mode:

Min.: 0

Unit: ms (s)

Max.: 10000

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms(s) to 10000 ms(s)

### Description



### H11.37 Displacement 6

Hex: 2011-26h

Effective      Real time  
mode:

Min.: -1073741824

Unit:            Reference unit

Max.: 1073741824

Data Type: Int32

Default: 10000

Change: Real-time

**Value Range:**

-1073741824 to 1073741824

### Description

—

**H11.39      Max. speed of displacement 6**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2011-28h | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 200      | Change:         | Real-time    |

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.40      Acc/Dec time of displacement 6**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-29h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.41      Interval time after displacement 6**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-2Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms (s)    |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.42      Displacement 7**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2011-2Bh    | Effective mode: | Real time      |
| Min.:    | -1073741824 | Unit:           | Reference unit |
| Max.:    | 1073741824  | Data Type:      | Int32          |
| Default: | 10000       | Change:         | Real-time      |

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.44 Max. speed of displacement 7**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2011-2Dh | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 200      | Change:         | Real-time    |

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.45 Acc/Dec time of displacement 7**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-2Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.46 Interval time after displacement 7**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-2Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms (s)    |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.47 Displacement 8**

|       |             |                 |                |
|-------|-------------|-----------------|----------------|
| Hex:  | 2011-30h    | Effective mode: | Real time      |
| Min.: | -1073741824 | Unit:           | Reference unit |
| Max.: | 1073741824  | Data Type:      | Int32          |

Default: 10000

Change: Real-time

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.49 Max. speed of displacement 8**

Hex: 2011-32h

Effective Real time

mode:

Min.: 1

Unit: [mm/s]/[rpm]

Max.: 10000

Data Type: UInt16

Default: 200

Change: Real-time

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.50 Acc/Dec time of displacement 8**

Hex: 2011-33h

Effective Real time

mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.51 Interval time after displacement 8**

Hex: 2011-34h

Effective Real time

mode:

Min.: 0

Unit: ms (s)

Max.: 10000

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

|               |                                                        |             |                 |
|---------------|--------------------------------------------------------|-------------|-----------------|
| <b>H11.52</b> | <b>Displacement 9</b>                                  |             |                 |
|               | Hex:                                                   | 2011-35h    | Effective mode: |
|               | Min.:                                                  | -1073741824 | Unit:           |
|               | Max.:                                                  | 1073741824  | Data Type:      |
|               | Default:                                               | 10000       | Change:         |
|               | <b>Value Range:</b><br>-1073741824 to 1073741824       |             |                 |
|               | <b>Description</b><br>-                                |             |                 |
| <b>H11.54</b> | <b>Max. speed of displacement 9</b>                    |             |                 |
|               | Hex:                                                   | 2011-37h    | Effective mode: |
|               | Min.:                                                  | 1           | Unit:           |
|               | Max.:                                                  | 10000       | Data Type:      |
|               | Default:                                               | 200         | Change:         |
|               | <b>Value Range:</b><br>1[mm/s]/[rpm]–10000[mm/s]/[rpm] |             |                 |
|               | <b>Description</b><br>-                                |             |                 |
| <b>H11.55</b> | <b>Acc/Dec time of displacement 9</b>                  |             |                 |
|               | Hex:                                                   | 2011-38h    | Effective mode: |
|               | Min.:                                                  | 0           | Unit:           |
|               | Max.:                                                  | 65535       | Data Type:      |
|               | Default:                                               | 10          | Change:         |
|               | <b>Value Range:</b><br>0 ms to 65535 ms                |             |                 |
|               | <b>Description</b><br>-                                |             |                 |
| <b>H11.56</b> | <b>Interval time after displacement 9</b>              |             |                 |
|               | Hex:                                                   | 2011-39h    | Effective mode: |
|               | Min.:                                                  | 0           | Unit:           |
|               | Max.:                                                  | 10000       | Data Type:      |
|               | Default:                                               | 10          | Change:         |
|               | <b>Value Range:</b><br>0 ms(s) to 10000 ms(s)          |             |                 |

**Description**

-

**H11.57****Displacement 10**

Hex: 2011-3Ah

Effective Real time

mode:

Min.: -1073741824

Unit: Reference unit

Max.: 1073741824

Data Type: Int32

Default: 10000

Change: Real-time

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.59****Max. speed of displacement 10**

Hex: 2011-3Ch

Effective Real time

mode:

Min.: 1

Unit: [mm/s]/[rpm]

Max.: 10000

Data Type: UInt16

Default: 200

Change: Real-time

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.60****Acc/Dec time of displacement 10**

Hex: 2011-3Dh

Effective Real time

mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.61****Interval time after displacement 10**

Hex: 2011-3Eh

Effective Real time

mode:

Min.: 0

Unit: ms (s)

Max.: 10000

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.62 Displacement 11**

Hex: 2011-3Fh

Effective Real time

mode:

Min.: -1073741824

Unit: Reference unit

Max.: 1073741824

Data Type: Int32

Default: 10000

Change: Real-time

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.64 Max. speed of displacement 11**

Hex: 2011-41h

Effective Real time

mode:

Min.: 1

Unit: [mm/s]/[rpm]

Max.: 10000

Data Type: UInt16

Default: 200

Change: Real-time

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.65 Acc/Dec time of displacement 11**

Hex: 2011-42h

Effective Real time

mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

-



**H11.66 Interval time after displacement 11**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-43h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms (s)    |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.67 Displacement 12**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2011-44h    | Effective mode: | Real time      |
| Min.:    | -1073741824 | Unit:           | Reference unit |
| Max.:    | 1073741824  | Data Type:      | Int32          |
| Default: | 10000       | Change:         | Real-time      |

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.69 Max. speed of displacement 12**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2011-46h | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 200      | Change:         | Real-time    |

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.70 Acc/Dec time of displacement 12**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-47h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.71 Interval time after displacement 12**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-48h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms (s)    |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.72 Displacement 13**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2011-49h    | Effective mode: | Real time      |
| Min.:    | -1073741824 | Unit:           | Reference unit |
| Max.:    | 1073741824  | Data Type:      | Int32          |
| Default: | 10000       | Change:         | Real-time      |

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.74 Max. speed of displacement 13**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2011-4Bh | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 200      | Change:         | Real-time    |

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.75 Acc/Dec time of displacement 13**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2011-4Ch | Effective mode: | Real time |
| Min.: | 0        | Unit:           | ms        |
| Max.: | 65535    | Data Type:      | UInt16    |

Default: 10

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.76 Interval time after displacement 13**

Hex: 2011-4Dh

Effective mode: Real time

Min.: 0

Unit: ms (s)

Max.: 10000

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.77 Displacement 14**

Hex: 2011-4Eh

Effective mode: Real time

Min.: -1073741824

Unit: Reference unit

Max.: 1073741824

Data Type: Int32

Default: 10000

Change: Real-time

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.79 Max. speed of displacement 14**

Hex: 2011-50h

Effective mode: Real time

Min.: 1

Unit: [mm/s]/[rpm]

Max.: 10000

Data Type: UInt16

Default: 200

Change: Real-time

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.80 Acc/Dec time of displacement 14**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-51h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.81 Interval time after displacement 14**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-52h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms (s)    |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.82 Displacement 15**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2011-53h    | Effective mode: | Real time      |
| Min.:    | -1073741824 | Unit:           | Reference unit |
| Max.:    | 1073741824  | Data Type:      | Int32          |
| Default: | 10000       | Change:         | Real-time      |

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.84 Max. speed of displacement 15**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2011-55h | Effective mode: | Real time    |
| Min.:    | 1        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | UInt16       |
| Default: | 200      | Change:         | Real-time    |

**Value Range:**

1[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H11.85 Acc/Dec time of displacement 15**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-56h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H11.86 Interval time after displacement 15**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2011-57h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms (s)    |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 10       | Change:         | Real-time |

**Value Range:**

0 ms(s) to 10000 ms(s)

**Description**

-

**H11.87 Displacement 16**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2011-58h    | Effective mode: | Real time      |
| Min.:    | -1073741824 | Unit:           | Reference unit |
| Max.:    | 1073741824  | Data Type:      | Int32          |
| Default: | 10000       | Change:         | Real-time      |

**Value Range:**

-1073741824 to 1073741824

**Description**

-

**H11.89 Max. speed of displacement 16**

|       |          |                 |              |
|-------|----------|-----------------|--------------|
| Hex:  | 2011-5Ah | Effective mode: | Real time    |
| Min.: | 1        | Unit:           | [mm/s]/[rpm] |
| Max.: | 10000    | Data Type:      | UInt16       |

Change: Real-time

**Value Range:**

$$1[\text{mm/s}]/[\text{rpm}]-10000[\text{mm/s}]/[\text{rpm}]$$

### Description

—

### H11.90 Acc/Dec time of displacement 16

Hex: 2011-5Bh

| Effective mode: | Real time |
|-----------------|-----------|
|-----------------|-----------|

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms to 65535 ms

### Description

—

### H11.91 Interval time after displacement 16

Hex: 2011-5Ch

Effective      Real time  
mode:

Min.: 0

Unit: ms (s)

Max.: 10000

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms(s) to 10000 ms(s)

### Description

—

#### 4.18 H12 Multi-Speed

## H12.00 Multi-speed operation mode

Hex: 2012-01h

Effective      Real time  
mode:

Min.: 0

Unit: -

Max.: 2

Data Type: UInt16

Default: 1

Change: At stop

**Value Range:**

0: Individual operation (number of speeds selected in H12.01)

1: Cyclic operation (number of speeds selected in H12.01)

## 2: DI-based operation

### Description

Defines the multi-speed operation mode when the speed reference source is multi-speed reference (H06.01 = 5, H06.02 = 1/2/3) in the speed control mode.

0: Stop after one run, and the segment No. is auto incremented and switched

1: Cyclic. The starting segment number of each run is 1, and the segment number is auto incremented and switched. If the servo drive is enabled, the cyclic operation state is maintained all the time.

2. The drive can run continuously when it is enabled. The segment number is determined by DI terminal logic. The running time of each speed reference is only determined by the interval time of segment number switching. FunIN.5 (DIR-SEL) can be used to switch the direction of the speed reference.

The S-ON signal must be active during running of each speed reference; otherwise, the servo drive will stop immediately as defined by H02.05 (Stop mode at S-ON off).

Speed arrival (FunOUT.19: V-Arr) signal is valid when a certain speed reference reaches the set value.

### H12.01 Number of speed references in multi-speed mode

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-02h | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 16       | Data Type:      | UInt16    |
| Default: | 16       | Change:         | At stop   |

#### Value Range:

1–16

#### Description

Defines the total number of speed references in the multi-speed mode. Different speed references, operating time, and acceleration/deceleration time (four groups optional) can be set for each speed.

H12.00 ≠ 2: Speeds are switched automatically in a sequence from 1, 2...

H12.01.

H12.00 is 2: Assign four DIs (Hardware DI or VDI) with DI functions 6 to 9 (FunIN.6: CMD1 to FunIN.9: CMD4) and control the DI logic through the host controller to switch between different speeds. The segment No. is a 4-bit binary value. Bits 0 to 3 correspond to CMD1 to CMD4.

### H12.02 Operating time unit

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-03h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: s

1: min

**Description**

Defines the time unit of multi-speed operation.

0: s

1: min

**H12.03****Acceleration time 1**

Hex: 2012-04h

Effective Real time

mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

Four groups of acceleration/deceleration time can be set for each speed reference.

Acceleration time: time for the motor to accelerate from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm] at a constant speed.

**H12.04****Deceleration time 1**

Hex: 2012-05h

Effective Real time

mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 10

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

Four groups of acceleration/deceleration time can be set for each speed reference.

Deceleration time: time for the motor to decelerate from 1000 [mm/s]/[rpm] to 0 [mm/s]/[rpm] at a constant speed.

**H12.05****Acceleration time 2**

Hex: 2012-06h

Effective Real time

mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 50

Change: Real-time



**Value Range:**

0 ms to 65535 ms

**Description**

Four groups of acceleration/deceleration time can be set for each speed reference.

Acceleration time: time for the motor to accelerate from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm] at a constant speed.

**H12.06****Deceleration time 2**

Hex: 2012-07h

Effective mode: Real time

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 50

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

Four groups of acceleration/deceleration time can be set for each speed reference.

Deceleration time: time for the motor to decelerate from 1000 [mm/s]/[rpm] to 0 [mm/s]/[rpm] at a constant speed.

**H12.07****Acceleration time 3**

Hex: 2012-08h

Effective mode: Real time

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 100

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

Four groups of acceleration/deceleration time can be set for each speed reference.

Acceleration time: time for the motor to accelerate from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm] at a constant speed.

**H12.08****Deceleration time 3**

Hex: 2012-09h

Effective mode: Real time

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 100

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

Four groups of acceleration/deceleration time can be set for each speed reference.

Deceleration time: time for the motor to decelerate from 1000 [mm/s]/[rpm] to 0 [mm/s]/[rpm] at a constant speed.

**H12.09****Acceleration time 4**

Hex: 2012-0Ah

Effective mode: Real time

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 150

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

Four groups of acceleration/deceleration time can be set for each speed reference.

Acceleration time: time for the motor to accelerate from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm] at a constant speed.

**H12.10****Deceleration time 4**

Hex: 2012-0Bh

Effective mode: Real time

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 150

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

Four groups of acceleration/deceleration time can be set for each speed reference.

Deceleration time: time for the motor to decelerate from 1000 [mm/s]/[rpm] to 0 [mm/s]/[rpm] at a constant speed.

**H12.20****1st speed reference**

Hex: 2012-15h

Effective mode: Real time

Min.: -10000

Unit: [mm/s]/[rpm]

Max.: 10000

Data Type: Int16

Default: 0

Change: Real-time

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.21      Operating time of speed 1**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-16h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

Defines the operating time of speed 1.

The operating time is the sum of the speed variation time from previous speed reference to present speed reference plus the average operating time of present speed reference.

If the operating time is set to 0, the drive skips this speed reference automatically.

As long as H12.00 (Multi-speed operation mode) is set to 2 (DI-based operation) and the speed No. determined by the external DI does not change, the drive continues operating at the speed defined by this speed reference, without being affected by the reference operating time.

**H12.22      Acc./dec. time of speed 1**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-17h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Defines the acceleration/deceleration time of speed 1.

0: Zero acceleration/deceleration time (acceleration time: 0; deceleration time: 0)

1: Acceleration/Deceleration time 1 (acceleration time: H12.03; deceleration time: H12.04)

2: Acceleration/Deceleration time 2 (acceleration time: H12.05; deceleration time: H12.06)

3: Acceleration/Deceleration time 3 (acceleration time: H12.07; deceleration time: H12.08)

4: Acceleration/Deceleration time 4 (acceleration time: H12.09; deceleration time: H12.10)

### H12.23 Reference 2

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-18h | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | 100      | Change:         | Real-time    |

#### Value Range:

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

#### Description

-

### H12.24 Operating time of speed 2

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-19h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

#### Value Range:

0.0s(m) to 6553.5s(m)

#### Description

-

### H12.25 Acc./dec. time of speed 2

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-1Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

#### Value Range:

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.26**

**Reference 3**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-1Bh | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | 300      | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.27**

**Operating time of speed 3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-1Ch | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.28**

**Acc./dec. time of speed 3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-1Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.29****Reference 4**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-1Eh | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | 500      | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.30****Operating time of speed 4**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-1Fh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.31****Acc./dec. time of speed 4**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-20h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.32**
**Reference 5**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-21h | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | 700      | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.33**
**Operating time of speed 5**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-22h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.34**
**Acc./dec. time of speed 5**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-23h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.35**
**Reference 6**

|       |          |                 |              |
|-------|----------|-----------------|--------------|
| Hex:  | 2012-24h | Effective mode: | Real time    |
| Min.: | -10000   | Unit:           | [mm/s]/[rpm] |

|          |       |            |           |
|----------|-------|------------|-----------|
| Max.:    | 10000 | Data Type: | Int16     |
| Default: | 900   | Change:    | Real-time |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.36 Operating time of speed 6**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-25h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.37 Acc./dec. time of speed 6**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-26h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.38 Reference 7**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-27h | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | 600      | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]



**Description**

-

**H12.39 Operating time of speed 7**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-28h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.40 Acc./dec. time of speed 7**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-29h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.41 Reference 8**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-2Ah | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | 300      | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.42 Operating time of speed 8**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-2Bh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.43 Acc./dec. time of speed 8**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-2Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.44 Reference 9**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-2Dh | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | 100      | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.45 Operating time of speed 9**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2012-2Eh | Effective mode: | Real time |
| Min.: | 0.0      | Unit:           | s (m)     |

|          |        |            |           |
|----------|--------|------------|-----------|
| Max.:    | 6553.5 | Data Type: | UInt16    |
| Default: | 5.0    | Change:    | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.46 Acc./dec. time of speed 9**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-2Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.47 Reference 10**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-30h | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | -100     | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.48 Operating time of speed 10**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-31h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.49 Acc./dec. time of speed 10**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-32h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.50 Reference 11**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-33h | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | -300     | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.51 Operating time of speed 11**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-34h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.52 Acc./dec. time of speed 11**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-35h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.53 Reference 12**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-36h | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | -500     | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.54 Operating time of speed 12**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-37h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.55 Acc./dec. time of speed 12**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2012-38h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |

|          |       |            |           |
|----------|-------|------------|-----------|
| Max.:    | 65535 | Data Type: | UInt16    |
| Default: | 256   | Change:    | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.56****Reference 13**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-39h | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | -700     | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.57****Operating time of speed 13**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-3Ah | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.58****Acc./dec. time of speed 13**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-3Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

- 0: Zero acceleration/deceleration time
- 1: Acceleration/Deceleration time 1
- 2: Acceleration/Deceleration time 2
- 3: Acceleration/Deceleration time 3
- 4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.59**

**Reference 14**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-3Ch | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | -900     | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.60**

**Operating time of speed 14**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-3Dh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.61**

**Acc./dec. time of speed 14**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-3Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

- 0: Zero acceleration/deceleration time
- 1: Acceleration/Deceleration time 1
- 2: Acceleration/Deceleration time 2
- 3: Acceleration/Deceleration time 3
- 4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

**H12.62****Reference 15**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-3Fh | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | -600     | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.63****Operating time of speed 15**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-40h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.64****Acc./dec. time of speed 15**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-41h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.



**H12.65**

**Reference 16**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2012-42h | Effective mode: | Real time    |
| Min.:    | -10000   | Unit:           | [mm/s]/[rpm] |
| Max.:    | 10000    | Data Type:      | Int16        |
| Default: | -300     | Change:         | Real-time    |

**Value Range:**

-10000[mm/s]/[rpm]–10000[mm/s]/[rpm]

**Description**

-

**H12.66**

**Operating time of speed 16**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-43h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | s (m)     |
| Max.:    | 6553.5   | Data Type:      | UInt16    |
| Default: | 5.0      | Change:         | Real-time |

**Value Range:**

0.0s(m) to 6553.5s(m)

**Description**

-

**H12.67**

**Acc./dec. time of speed 16**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2012-44h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 256      | Change:         | Real-time |

**Value Range:**

0: Zero acceleration/deceleration time

1: Acceleration/Deceleration time 1

2: Acceleration/Deceleration time 2

3: Acceleration/Deceleration time 3

4: Acceleration/Deceleration time 4

**Description**

Same as H12.22.

# 4.19 H14 Gantry Synchronization

## H14.00 Gantry communication state

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2014-01h | Effective  | -            |
| Min.:    | 0        | mode:      |              |
| Max.:    | 1        | Unit:      | -            |
| Default: | 0        | Data Type: | UInt16       |
|          |          | Change:    | Unchangeable |

### Value Range:

0–1

### Description

Used to judge whether both axes have established communication after the gantry function is enabled.

## H14.01 Gantry alignment state

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2014-02h | Effective  | -            |
| Min.:    | 0        | mode:      |              |
| Max.:    | 1        | Unit:      | -            |
| Default: | 0        | Data Type: | UInt16       |
|          |          | Change:    | Unchangeable |

### Value Range:

0–1

### Description

After the gantry alignment is completed, the gantry alignment state will be set to 1 to determine whether the gantry alignment is completed.

## H14.02 Gantry function selection

|          |          |            |                        |
|----------|----------|------------|------------------------|
| Hex:     | 2014-03h | Effective  | Upon the next power-on |
| Min.:    | 0        | mode:      |                        |
| Max.:    | 1        | Unit:      | -                      |
| Default: | 0        | Data Type: | UInt16                 |
|          |          | Change:    | At stop                |

### Value Range:

0: None

1: Gantry synchronization

### Description

Gantry function selection.

0: Disabled

1: Enabled

**H14.03      Gantry axis attribute (master-slave)**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2014-04h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Slave axis

1: Master axis

**Description**

Selects the gantry axis attribute.

0: Slave axis

1: Master axis

**H14.04      Gantry mechanical attribute**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2014-05h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 3        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Rigid gantry scheme 1-Two-axis position control

1: Flexible gantry scheme 1-Two-axis position control

2: Rigid gantry scheme 2-Master axis position control and slave axis torque control

**Description**

The gantry mechanical attribute is related to the mechanical structure type of the gantry, which can be divided into rigid crossbeam frame connection and flexible crossbeam frame connection.

0: Rigid crossbeam frame, "axis sticking" may occur if both axes deviate too much

1: Flexible crossbeam frame, sync deviation is allowed between both axes

2: Rigid crossbeam frame, suitable for applications do not require high accuracy

**H14.05      Current axis position sync direction**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2014-06h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Forward

1: Reverse

### Description

The synchronous direction of the two axes is related to the installation direction of the motor and the rotation direction of H02.02.

0: Forward

1: Reverse

## H14.07

### Gantry sync enable

Hex: 2014-08h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 2

Data Type: UInt16

Default: 0

Change: Real-time

### Value Range:

0: Disabled

1: Enabled

2: DI-enabled

### Description

Selects the gantry synchronization enable mode to adjust the gain of gantry slave axis compensation. When it is enabled, H14.08–H14.11 will take effect.

0: Disabled

1: Enabled

2: DI-enabled

## H14.08

### Gantry sync position loop proportional gain

Hex: 2014-09h

Effective Real time

mode:

Min.: 0.0

Unit: %

Max.: 300.0

Data Type: UInt16

Default: 0.0

Change: Real-time

### Value Range:

0.0% to 300.0%

### Description

It is only effective for the slave axis.

## H14.09

### Gantry sync position loop integral time constant

Hex: 2014-0Ah

Effective Real time

mode:

Min.: 0.5

Unit: ms

Max.: 1000.0

Data Type: UInt16

Default: 1000.0

Change: Real-time

**Value Range:**

0.5 ms to 1000.0 ms

**Description**

It is only effective for the slave axis.

**H14.10 Gantry sync speed loop proportional gain**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-0Bh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 300.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | Real-time |

**Value Range:**

0.0% to 300.0%

**Description**

It is only effective for the slave axis.

**H14.11 Gantry sync speed loop integral time constant**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-0Ch | Effective mode: | Real time |
| Min.:    | 0.5      | Unit:           | ms        |
| Max.:    | 1000.0   | Data Type:      | UInt16    |
| Default: | 1000.0   | Change:         | Real-time |

**Value Range:**

0.5 ms to 1000.0 ms

**Description**

It is only effective for the slave axis.

**H14.12 Gantry sync speed limit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-0Dh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | RPM       |
| Max.:    | 6000.0   | Data Type:      | UInt16    |
| Default: | 50.0     | Change:         | Real-time |

**Value Range:**

0.0rpm to 6000.0rpm

**Description**

Gantry sync speed limit.

**H14.13 Gantry alignment speed**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2014-0Eh | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |        |            |           |
|----------|--------|------------|-----------|
| Min.:    | 0.0    | Unit:      | RPM       |
| Max.:    | 3000.0 | Data Type: | UInt16    |
| Default: | 10.0   | Change:    | Real-time |

**Value Range:**

0.0rpm to 3000.0rpm

**Description**

Gantry alignment speed

**H14.14 Gantry alignment acc./dec. time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-0Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 1000     | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

**Value Range:**

0 ms–1000 ms

**Description**

Gantry alignment acc./dec. time

**H14.18 Torque pre-alignment before gantry homing**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-13h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Enables/disables torque pre-alignment before gantry homing.

0: Disabled

1: Enabled

**H14.20 Gantry aligned by default upon power-on**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2014-15h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 1        | Change:         | At stop                |

**Value Range:**

0: None

1: Align at first power-on

**Description**

Sets whether gantry alignment is performed by default upon power-on.

0: No operation

1: Aligned by default upon initial power-on of two axes

**H14.21      Gantry alignment mode**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2014-16h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 4        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0: Gantry homing alignment

2: Gantry torque alignment

3: Gantry enable alignment

4: Gantry DI alignment

**Description**

Gantry axis alignment mode

0: Gantry homing alignment

2: Gantry torque alignment

3: Gantry enable alignment

4: Gantry DI alignment

**H14.25      Flexible gantry homing - Master/slave home deviation auto-tuning**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-1Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: Torque alignment auto-tuning

2: Position auto-tuning

**Description**

Sets whether to perform master/slave home deviation auto-tuning when H14.04 is set to flexible gantry.

0: Disabled

1: Torque alignment auto-tuning

2: Position auto-tuning

**H14.26 Gantry torque alignment enable**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-1Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 3        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disabled  
 1: Enabled  
 2: DI-enabled  
 3: Enabled at power-on

**Description**

Selects gantry torque alignment enable mode in gantry alignment mode.

0: Disabled  
 1: Enabled  
 2: DI-enabled  
 3: Enabled at power-on

**H14.27 Gantry torque alignment torque**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-1Ch | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 300.0    | Data Type:      | UInt16    |
| Default: | 10.0     | Change:         | Real-time |

**Value Range:**

0.0% to 300.0%

**Description**

Torque value in gantry torque alignment mode.

**H14.28 Gantry torque alignment count**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-1Dh | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 2        | Data Type:      | UInt16    |
| Default: | 2        | Change:         | Real-time |

**Value Range:**

1–2

**Description**

The number of alignments in gantry torque alignment mode.



**H14.29****Gantry torque alignment speed**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-1Eh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | RPM       |
| Max.:    | 3000.0   | Data Type:      | UInt16    |
| Default: | 10.0     | Change:         | Real-time |

**Value Range:**

0.0rpm to 3000.0rpm

**Description**

The speed in gantry torque alignment mode.

**H14.30****Gantry torque alignment timeout alarm time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-1Fh | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | s         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

**Value Range:**

1s to 65535s

**Description**

Gantry torque alignment timeout alarm time

**H14.31****Gantry torque alignment acc./dec. time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-20h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 1000     | Data Type:      | UInt16    |
| Default: | 100      | Change:         | Real-time |

**Value Range:**

0 ms to 1000 ms

**Description**

Gantry torque alignment acc./dec. time

**H14.32****Gantry torque alignment zero speed threshold**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-21h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | RPM       |
| Max.:    | 100.0    | Data Type:      | UInt16    |
| Default: | 2.0      | Change:         | Real-time |

**Value Range:**

0.0rpm to 100.0rpm

**Description**

The zero speed threshold for gantry torque alignment.

**H14.33 Gantry torque alignment mechanical limit evaluation position loop period count**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-22h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 5        | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

Gantry torque alignment mechanical limit evaluation position loop period count

**H14.35 2-axis position deviation (encoder unit)**

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 2014-24h    | Effective mode: | -            |
| Min.:    | -2147483648 | Unit:           | p            |
| Max.:    | 2147483647  | Data Type:      | Int32        |
| Default: | 0           | Change:         | Unchangeable |

**Value Range:**

-2147483648p to 2147483647p

**Description**

The position deviation (encoder unit) between the active axis and the paired axis in gantry mode. It is related to H0B.17 of the two axes.

**H14.37 2-axis speed deviation**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2014-26h | Effective mode: | -            |
| Min.:    | -32767   | Unit:           | RPM          |
| Max.:    | 32767    | Data Type:      | Int16        |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

-32767rpm to 32767rpm

**Description**

It is the speed difference between the active axis and paired axis in gantry mode.

|                                 |                                        |                 |              |
|---------------------------------|----------------------------------------|-----------------|--------------|
| <b>H14.38</b>                   | <b>Torque reference of active axis</b> |                 |              |
| Hex:                            | 2014-27h                               | Effective mode: | -            |
| Min.:                           | -3276.7                                | Unit:           | %            |
| Max.:                           | 3276.7                                 | Data Type:      | Int16        |
| Default:                        | 0.0                                    | Change:         | Unchangeable |
| <b>Value Range:</b>             |                                        |                 |              |
| -3276.7% to 3276.7%             |                                        |                 |              |
| <b>Description</b>              |                                        |                 |              |
| Torque reference of active axis |                                        |                 |              |
| <b>H14.39</b>                   | <b>Torque reference of paired axis</b> |                 |              |
| Hex:                            | 2014-28h                               | Effective mode: | -            |
| Min.:                           | -3276.7                                | Unit:           | %            |
| Max.:                           | 3276.7                                 | Data Type:      | Int16        |
| Default:                        | 0.0                                    | Change:         | Unchangeable |
| <b>Value Range:</b>             |                                        |                 |              |
| -3276.7% to 3276.7%             |                                        |                 |              |
| <b>Description</b>              |                                        |                 |              |
| Torque reference of paired axis |                                        |                 |              |
| <b>H14.40</b>                   | <b>Motor speed of active axis</b>      |                 |              |
| Hex:                            | 2014-29h                               | Effective mode: | -            |
| Min.:                           | -32767                                 | Unit:           | RPM          |
| Max.:                           | 32767                                  | Data Type:      | Int16        |
| Default:                        | 0                                      | Change:         | Unchangeable |
| <b>Value Range:</b>             |                                        |                 |              |
| -32767rpm to 32767rpm           |                                        |                 |              |
| <b>Description</b>              |                                        |                 |              |
| Motor speed of active axis      |                                        |                 |              |
| <b>H14.41</b>                   | <b>Motor speed of paired axis</b>      |                 |              |
| Hex:                            | 2014-2Ah                               | Effective mode: | -            |
| Min.:                           | -32767                                 | Unit:           | RPM          |
| Max.:                           | 32767                                  | Data Type:      | Int16        |
| Default:                        | 0                                      | Change:         | Unchangeable |
| <b>Value Range:</b>             |                                        |                 |              |
| -32767rpm to 32767rpm           |                                        |                 |              |

**Description**

Motor speed of paired axis

**H14.44 Alarm time threshold of large gantry deviation**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-2Dh | Effective mode: | Real time |
| Min.:    | 0.5      | Unit:           | ms        |
| Max.:    | 1000.0   | Data Type:      | UInt16    |
| Default: | 3.0      | Change:         | Real-time |

**Value Range:**

0.5 ms–1000.0 ms

**Description**

The alarm time threshold of large gantry deviation.

**H14.45 Gantry position alarm threshold**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2014-2Eh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | p         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 50000       | Change:         | At stop   |

**Value Range:**

-2147483648p to 2147483647p

**Description**

Gantry position alarm threshold.

**H14.47 Large gantry position deviation alarm enable**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-30h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Large gantry position deviation alarm enable

0: Disabled

1: Enabled

**H14.48 Alarm time threshold of large gantry torque deviation**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-31h | Effective mode: | Real time |
| Min.:    | 0.5      | Unit:           | ms        |
| Max.:    | 1000.0   | Data Type:      | UInt16    |
| Default: | 3.0      | Change:         | Real-time |

**Value Range:**

0.5 ms–1000.0 ms

**Description**

The alarm time threshold of large gantry torque deviation.

**H14.49 Gantry torque deviation alarm threshold**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-32h | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 800.0    | Data Type:      | Int16     |
| Default: | 300.0    | Change:         | At stop   |

**Value Range:**

0.0% to 800.0%

**Description**

The alarm threshold for large gantry torque deviation.

**H14.50 Large gantry torque deviation alarm enable**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-33h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Enables/disables large gantry torque deviation alarm.

0: Disabled

1: Enabled

**H14.52 Gantry mismatch**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2014-35h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 1451     | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–1451

**Description**

If the parameters of the two axes of the gantry do not match, they will be displayed.

**H14.71 Flexible gantry homing - Enable aligning slave axis homing position to home offset**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-48h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: No operation1: Enabled

**Description**

Flexible gantry homing - Enable aligning slave axis homing position to home offset

0: No operation

1: Enabled

**H14.74 Gantry scheme 2 slave axis enable**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2014-4Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: No operation

1: Enabled

**Description**

0: Slave axis not respond to position references in gantry scheme 2

1: Slave axis respond to position references in gantry scheme 2

**4.20 H17 Virtual DI/DO****H17.90 Communication VDI enable**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2017-5Bh | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 1        | Data Type:      | UInt16    |

Default: 0 Change: At stop

**Value Range:**

0: Disabled

1: Enabled

**Description**

To use the VDI function:

1. Set H17.90 to enable VDI.
2. Set the default level after power-on through H17.91.
3. Set the DI function of the VDI terminal through parameters in group H17.
4. Set VDI output through H31.00.

**H17.91 VDI default value after power-on**

Hex: 2017-5Ch Effective mode: Upon the next power-on

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

bit0: VDI1

bit1: VDI2

bit2: VDI3

bit3: VDI4

bit4: VDI5

bit5: VDI6

bit6: VDI7

bit7: VDI8

bit8: VDI9

bit9: VDI10

bit10: VDI11

bit11: VDI12

bit12: VDI13

bit13: VDI14

bit14: VDI15

bit15: VDI16

**Description**

Configures the initial value of VDI upon power-on.

Bit 0 corresponds to VDI1.

Bit 1 corresponds to VDI2.

...

Bit 15 corresponds to VDI16.

**H17.00****VDI1 function selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-01h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 59       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

- 0: Undefined
- 1: Servo enabled
- 2: Alarm reset signal
- 5: Multi-run reference direction selection
- 6: Multi-run reference switching CMD1
- 7: Multi-run reference switching CMD2
- 8: Multi-run reference switching CMD3
- 9: Multi-run reference switching CMD4
- 14: Positive limit switch
- 15: Negative limit switch
- 18: Forward jog
- 19: Reverse jog
- 24: Electronic gear selection
- 28: Multi-position reference enable
- 31: Home switch
- 34: Emergency stop
- 40: Multi-speed enable
- 46: Process segment enable
- 47: Process segment command switch 1
- 48: Process segment command switch 2
- 49: Process segment switch 3
- 50: Process segment switch 4
- 51: Event-triggered process segment 1
- 52: Event-triggered process segment 2
- 53: Event-triggered process segment 3
- 54: Event-triggered process segment 4
- 55: Process segment halt
- 56: Gantry torque alignment
- 57: Gantry DI alignment enable
- 58: Gantry DI alignment clear
- 59: Gantry synchronization enable

**Description**

Defines the function of DI1.



**H17.01 VDI1 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-02h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.02 VDI2 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-03h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 59       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

**Description**

Defines the function of DI1.

**H17.03 VDI2 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-04h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.04 VDI3 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-05h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 59       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

### Description

Defines the function of DI1.

## H17.05 VDI3 logic level selection

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-06h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

### Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

### Description

-

## H17.06 VDI4 function

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-07h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 59       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

### Value Range:

See H17.00.

### Description

Defines the function of DI1.

## H17.07 VDI4 logic level selection

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-08h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

### Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

### Description

-

## H17.08 VDI5 function

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2017-09h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |    |            |           |
|----------|----|------------|-----------|
| Min.:    | 0  | Unit:      | -         |
| Max.:    | 59 | Data Type: | UInt16    |
| Default: | 0  | Change:    | Real-time |

**Value Range:**

See H17.00.

**Description**

Defines the function of DI1.

**H17.09 VDI5 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-0Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.10 VDI6 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-0Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 59       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

**Description**

Defines the function of DI1.

**H17.11 VDI6 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-0Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

|               |                                                      |          |                        |
|---------------|------------------------------------------------------|----------|------------------------|
| <b>H17.12</b> | <b>VDI7 function</b>                                 |          |                        |
|               | Hex:                                                 | 2017-0Dh | Effective    Real time |
|               |                                                      |          | mode:                  |
|               | Min.:                                                | 0        | Unit:       -          |
|               | Max.:                                                | 59       | Data Type: UInt16      |
|               | Default:                                             | 0        | Change:    Real-time   |
|               | <b>Value Range:</b>                                  |          |                        |
|               | See H17.00.                                          |          |                        |
|               | <b>Description</b>                                   |          |                        |
|               | Defines the function of DI1.                         |          |                        |
| <b>H17.13</b> | <b>VDI7 logic level selection</b>                    |          |                        |
|               | Hex:                                                 | 2017-0Eh | Effective    Real time |
|               |                                                      |          | mode:                  |
|               | Min.:                                                | 0        | Unit:       -          |
|               | Max.:                                                | 1        | Data Type: UInt16      |
|               | Default:                                             | 0        | Change:    Real-time   |
|               | <b>Value Range:</b>                                  |          |                        |
|               | 0: Active when the written value is 1                |          |                        |
|               | 1: Active when the written value changes from 0 to 1 |          |                        |
|               | <b>Description</b>                                   |          |                        |
|               | -                                                    |          |                        |
| <b>H17.14</b> | <b>VDI8 function</b>                                 |          |                        |
|               | Hex:                                                 | 2017-0Fh | Effective    Real time |
|               |                                                      |          | mode:                  |
|               | Min.:                                                | 0        | Unit:       -          |
|               | Max.:                                                | 59       | Data Type: UInt16      |
|               | Default:                                             | 0        | Change:    Real-time   |
|               | <b>Value Range:</b>                                  |          |                        |
|               | See H17.00.                                          |          |                        |
|               | <b>Description</b>                                   |          |                        |
|               | Defines the function of DI1.                         |          |                        |
| <b>H17.15</b> | <b>VDI8 logic level selection</b>                    |          |                        |
|               | Hex:                                                 | 2017-10h | Effective    Real time |
|               |                                                      |          | mode:                  |
|               | Min.:                                                | 0        | Unit:       -          |
|               | Max.:                                                | 1        | Data Type: UInt16      |
|               | Default:                                             | 0        | Change:    Real-time   |
|               | <b>Value Range:</b>                                  |          |                        |

0: Active when the written value is 1  
1: Active when the written value changes from 0 to 1

**Description**

-

**H17.16**

**VDI9 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-11h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 59       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

**Description**

Defines the function of DI1.

**H17.17**

**VDI9 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-12h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.18**

**VDI10 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-13h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 59       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

**Description**

Defines the function of DI1.

**H17.19**

**VDI10 logic level selection**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2017-14h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |   |            |           |
|----------|---|------------|-----------|
| Min.:    | 0 | Unit:      | -         |
| Max.:    | 1 | Data Type: | UInt16    |
| Default: | 0 | Change:    | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.20****VDI11 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-15h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 59       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

**Description**

Defines the function of DI1.

**H17.21****VDI11 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-16h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.22****VDI12 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-17h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 59       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

**Description**

Defines the function of DI1.

**H17.23 VDI12 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-18h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.24 VDI13 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-19h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 59       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

**Description**

Defines the function of DI1.

**H17.25 VDI13 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-1Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.26 VDI14 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-1Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 59       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.00.

### Description

Defines the function of DI1.

## H17.27 VDI14 logic level selection

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-1Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

### Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

### Description

-

## H17.28 VDI15 function

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-1Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 59       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

### Value Range:

See H17.00.

### Description

Defines the function of DI1.

## H17.29 VDI15 logic level selection

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-1Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

### Value Range:

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

### Description

-

## H17.30 VDI16 function

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2017-1Fh | Effective mode: | Real time |
|------|----------|-----------------|-----------|



|          |    |            |           |
|----------|----|------------|-----------|
| Min.:    | 0  | Unit:      | -         |
| Max.:    | 59 | Data Type: | UInt16    |
| Default: | 0  | Change:    | Real-time |

**Value Range:**

See H17.00.

**Description**

Defines the function of DI1.

**H17.31 VDI16 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-20h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Active when the written value is 1

1: Active when the written value changes from 0 to 1

**Description**

-

**H17.92 Communication VDO enable**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-5Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0: Disabled

1: Enabled

**Description**

To use the VDO function:

1. Set H17.92 to enable VDO.

2. Set the default level after power-on through H17.93.

3. Set the DO function of the VDO terminal through parameters in group H17.

4: Read the output level of the VDO in H17.32.

**H17.93 VDO default value after power-on**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-5Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

bit0: VDO1  
 bit1: VDO2  
 bit2: VDO3  
 bit3: VDO4  
 bit4: VDO5  
 bit5: VDO6  
 bit6: VDO7  
 bit7: VDO8  
 bit8: VDO9  
 bit9: VDO10  
 bit10: VDO11  
 bit11: VDO12  
 bit12: VDO13  
 bit13: VDO14  
 bit14: VDO15  
 bit15: VDO16

**Description**

Configures the initial value of VDO upon power-on.  
 Bit 0 corresponds to VDO1.  
 Bit 1 corresponds to VDO2.  
 ...  
 Bit 15 corresponds to VDO16.

**H17.32**

**VDO virtual level**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2017-21h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

-

**H17.33**

**VDO1 function selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-22h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 33       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Undefined  
1: Servo ready  
2: Motor rotation signal  
9: Braking  
10: Warning  
11: Failure  
26: Closed-loop state  
27: Left limit  
28: Right limit  
31: Forced communication DO  
32: EDM output  
33: Gantry alignment

**Description**

-

**H17.34 VDO1 logic level selection**

Hex: 2017-23h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.35 VDO2 function**

Hex: 2017-24h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 33

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

See H17.33.

**Description**

-

**H17.36 VDO2 logic level selection**

Hex: 2017-25h

Effective mode: Real time

|          |   |            |           |
|----------|---|------------|-----------|
| Min.:    | 0 | Unit:      | -         |
| Max.:    | 1 | Data Type: | UInt16    |
| Default: | 0 | Change:    | Real-time |

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.37 VDO3 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-26h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 33       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.33.

**Description**

-

**H17.38 VDO3 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-27h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.39 VDO4 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-28h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 33       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.33.

**Description**

-

**H17.40 VDO4 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-29h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.41 VDO5 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-2Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 33       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.33.

**Description**

-

**H17.42 VDO5 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-2Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.43 VDO6 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-2Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 33       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.33.

**Description**

-

**H17.44 VDO6 logic level selection**

Hex: 2017-2Dh

Effective mode: Real time

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.45 VDO7 function**

Hex: 2017-2Eh

Effective mode: Real time

Min.: 0

Unit: -

Max.: 33

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

See H17.33.

**Description**

-

**H17.46 VDO7 logic level selection**

Hex: 2017-2Fh

Effective mode: Real time

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.47 VDO8 function**

Hex: 2017-30h

Effective mode: Real time

|          |    |            |           |
|----------|----|------------|-----------|
| Min.:    | 0  | Unit:      | -         |
| Max.:    | 33 | Data Type: | UInt16    |
| Default: | 0  | Change:    | Real-time |

**Value Range:**

See H17.33.

**Description**

-

**H17.48 VDO8 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-31h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.49 VDO9 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-32h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 33       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.33.

**Description**

-

**H17.50 VDO9 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-33h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.51 VDO10 function**

Hex: 2017-34h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 33

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

See H17.33.

**Description**

-

**H17.52 VDO10 logic level selection**

Hex: 2017-35h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.53 VDO11 function**

Hex: 2017-36h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 33

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

See H17.33.

**Description**

-

**H17.54 VDO11 logic level selection**

Hex: 2017-37h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**



0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.55****VDO12 function**

Hex: 2017-38h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 33

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

See H17.33.

**Description**

-

**H17.56****VDO12 logic level selection**

Hex: 2017-39h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.57****VDO13 function**

Hex: 2017-3Ah

Effective mode: Real time

Min.: 0

Unit: -

Max.: 33

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

See H17.33.

**Description**

-

**H17.58****VDO13 logic level selection**

Hex: 2017-3Bh

Effective mode: Real time

|          |   |            |           |
|----------|---|------------|-----------|
| Min.:    | 0 | Unit:      | -         |
| Max.:    | 1 | Data Type: | UInt16    |
| Default: | 0 | Change:    | Real-time |

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.59****VDO14 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-3Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 33       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.33.

**Description**

-

**H17.60****VDO14 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-3Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.61****VDO15 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-3Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 33       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.33.

**Description**

-

**H17.62 VDO15 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-3Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

**H17.63 VDO16 function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-40h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 33       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H17.33.

**Description**

-

**H17.64 VDO16 logic level selection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2017-41h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Output 1 upon active logic

1: Output 0 upon active logic

**Description**

-

## 4.21 H18 Position Comparison Output

**H18.00 Position comparison output selection**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2018-01h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |   |            |           |
|----------|---|------------|-----------|
| Min.:    | 0 | Unit:      | -         |
| Max.:    | 1 | Data Type: | UInt16    |
| Default: | 0 | Change:    | Real-time |

**Value Range:**

0: Disable

1: Enable (rising edge-triggered)

**Description**

-

**H18.01 Position comparison output feedback source**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2018-02h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | Real-time              |

**Value Range:**

0: Motor encoder feedback

1: Fully closed-loop position feedback

**Description**

-

**H18.02 Position comparison resolution**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2018-03h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 7        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

0: 24-bit

1: 23-bit

2: 22-bit

3: 21-bit

4: 20-bit

5: 19-bit

6: 18-bit

7: 17-bit

**Description**

-

**H18.03 Position comparison mode**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2018-04h | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |   |            |           |
|----------|---|------------|-----------|
| Min.:    | 0 | Unit:      | -         |
| Max.:    | 2 | Data Type: | UInt16    |
| Default: | 0 | Change:    | Real-time |

**Value Range:**

0: Individual comparison mode

1: Cyclic comparison mode

2: Fixed cyclic comparison mode

**Description**

-

**H18.04 Current position as zero**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2018-05h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0: Disable

1: Enable (rising edge-triggered)

**Description**

-

**H18.05 Position comparison output width**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2018-06h | Effective mode: | Real time |
| Min.:    | 0.1      | Unit:           | ms        |
| Max.:    | 204.7    | Data Type:      | UInt16    |
| Default: | 0.1      | Change:         | Real-time |

**Value Range:**

0.1 ms to 204.7 ms

**Description**

Defines the active pulse width of the DO when the comparison point is reached.  
The value range is 0 to 204.7 (unit: 1 ms).

**H18.06 Position comparison output ABZ port polarity**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2018-07h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

| bit | Name             | Description                                      |
|-----|------------------|--------------------------------------------------|
| 0   | OCZ output logic | 0: Positive, output high level upon active logic |
|     |                  | 1: Negative, output low level upon active logic  |
| 1   | Z output logic   | 0: Positive, output high level upon active logic |
|     |                  | 1: Negative, output low level upon active logic  |
| 2   | A/B output logic | 0: Positive, output high level upon active logic |
|     |                  | 1: Negative, output low level upon active logic  |

**Description**

0: Positive (output high level upon active logic) 1: Negative (output high level upon active logic)

bit0: OCZ output logic

Bit1: Z output logic

Bit2: A/B output logic

**H18.07 Position comparison start point**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2018-08h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 40       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–40

**Description**

-

**H18.08 Position comparison end point**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2018-09h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 40       | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–40

**Description**

-

**H18.09      Current state of position comparison**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2018-0Ah | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 1024     | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–1024

**Description**

-

**H18.10      Real-time position of position comparison**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 2018-0Bh    | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | -2147483648 | Unit:      | -            |
| Max.:    | 2147483647  | Data Type: | Int32        |
| Default: | 0           | Change:    | Unchangeable |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H18.12      Zero offset of position comparison**

|          |             |            |           |
|----------|-------------|------------|-----------|
| Hex:     | 2018-0Dh    | Effective  | Real time |
|          |             | mode:      |           |
| Min.:    | -2147483648 | Unit:      | -         |
| Max.:    | 2147483647  | Data Type: | Int32     |
| Default: | 0           | Change:    | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H18.14      Position comparison output delay compensation**

|          |          |            |                        |
|----------|----------|------------|------------------------|
| Hex:     | 2018-0Fh | Effective  | Upon the next power-on |
|          |          | mode:      |                        |
| Min.:    | -12.00   | Unit:      | us                     |
| Max.:    | 12.00    | Data Type: | Int16                  |
| Default: | 0.00     | Change:    | Real-time              |

**Value Range:**

-12.00us to 12.00us

**Description**

Compensates the delay caused by hardware signal output.

**H18.15 Fixed cyclic comparison**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2018-10h | Effective mode: | Real time |
| Min.:    | 1        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 1        | Change:         | Real-time |

**Value Range:**

1–65535

**Description**

-

**H18.16 ABZ output function setting**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2018-11h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

| bit | Name                     | Description                  |
|-----|--------------------------|------------------------------|
| 0   | OCZ output function      | 0: Frequency-division output |
|     |                          | 1: Position comparison       |
| 1   | Z port output function   | 0: Frequency-division output |
|     |                          | 1: Position comparison       |
| 2   | A/B port output function | 0: Frequency-division output |
|     |                          | 1: Position comparison       |

**Description**

0: Frequency-division output 1: Position comparison

bit0: OCZ port function setting

Bit 1: Z port function setting

Bit 2: A/B function setting



**H18.17      Number of fixed mode cycles**

|                     |          |                 |              |
|---------------------|----------|-----------------|--------------|
| Hex:                | 2018-12h | Effective mode: | -            |
| Min.:               | 0        | Unit:           | -            |
| Max.:               | 65535    | Data Type:      | UInt16       |
| Default:            | 0        | Change:         | Unchangeable |
| <b>Value Range:</b> |          |                 |              |
| 0–65535             |          |                 |              |
| <b>Description</b>  |          |                 |              |
| -                   |          |                 |              |

**4.22 H19 Target Position Parameters****H19.00      Target value of position comparison 1**

|                        |             |                 |           |
|------------------------|-------------|-----------------|-----------|
| Hex:                   | 2019-01h    | Effective mode: | Real time |
| Min.:                  | -2147483648 | Unit:           | -         |
| Max.:                  | 2147483647  | Data Type:      | Int32     |
| Default:               | 0           | Change:         | Real-time |
| <b>Value Range:</b>    |             |                 |           |
| -2147483648–2147483647 |             |                 |           |
| <b>Description</b>     |             |                 |           |
| -                      |             |                 |           |

**H19.02      Attribute value of position comparison 1**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2019-03h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |

| bit  | Description                                                                                              |
|------|----------------------------------------------------------------------------------------------------------|
| 0    | Output DO active signal if current position changes from "less than" to "more than" the comparison point |
| 1    | Output DO active signal if current position changes from "more than" to "less than" the comparison point |
| 2–6  | Reserved                                                                                                 |
| 7    | DO1 output                                                                                               |
| 8    | DO2 output                                                                                               |
| 9–11 | Reserved                                                                                                 |
| 12   | Frequency-division A output                                                                              |
| 13   | Frequency-division B output                                                                              |
| 14   | Frequency-division Z output                                                                              |
| 15   | Frequency-division OCZ output                                                                            |

**Description**

Attribute setting of position comparison point 1

**H19.03 Target value of position comparison 2**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-04h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.05 Attribute value of position comparison 2**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-06h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.06 Target value of position comparison 3**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-07h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.08 Attribute value of position comparison 3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-09h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.09 Target value of position comparison 4**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-0Ah    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.11 Attribute value of position comparison 4**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-0Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.12 Target value of position comparison 5**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-0Dh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.14 Attribute value of position comparison 5**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-0Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.15 Target value of position comparison 6**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-10h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.17 Attribute value of position comparison 6**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2019-12h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 65535    | Data Type:      | UInt16    |

Change: Real-time

**Value Range:**

See H19.02.

### Description

See H19.02.

**H19.18 Target value of position comparison 7**

Effective      Real time

mode:

Unit: -

Data Type: Int32

Change: Real-time

**Value Range:**

-2147483648-2147483647

### Description

—

**H19.20**      **Attribute value of position comparison 7**

Effective      Real time

mode:

Unit: -

Data Type: UInt16

Change: Real-time

**Value Range:**

See H19.02.

### Description

See H19.02.

**H19.21** Target value of position comparison 8

Effective      Real time

mode:

Unit: -

Data Type: Int32

Change: Real-time

**Value Range:**

-2147483648-2147483647

### Description

—

### H19.23 Attribute value of position comparison 8

| Effective                                                                                                                                                                                                                                                                                                                       | Real time                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1. <b>Preparation</b></p> <ul style="list-style-type: none"> <li>1.1. <b>Preparation of the sample</b></li> <li>1.2. <b>Preparation of the reagents</b></li> <li>1.3. <b>Preparation of the standards</b></li> <li>1.4. <b>Preparation of the calibration curve</b></li> <li>1.5. <b>Preparation of the blank</b></li> </ul> | <p>1. <b>Preparation</b></p> <ul style="list-style-type: none"> <li>1.1. <b>Preparation of the sample</b></li> <li>1.2. <b>Preparation of the reagents</b></li> <li>1.3. <b>Preparation of the standards</b></li> <li>1.4. <b>Preparation of the calibration curve</b></li> <li>1.5. <b>Preparation of the blank</b></li> </ul> |
| <p>2. <b>Measurement</b></p> <ul style="list-style-type: none"> <li>2.1. <b>Measurement of the sample</b></li> <li>2.2. <b>Measurement of the reagents</b></li> <li>2.3. <b>Measurement of the standards</b></li> <li>2.4. <b>Measurement of the blank</b></li> </ul>                                                           | <p>2. <b>Measurement</b></p> <ul style="list-style-type: none"> <li>2.1. <b>Measurement of the sample</b></li> <li>2.2. <b>Measurement of the reagents</b></li> <li>2.3. <b>Measurement of the standards</b></li> <li>2.4. <b>Measurement of the blank</b></li> </ul>                                                           |
| <p>3. <b>Calculation</b></p> <ul style="list-style-type: none"> <li>3.1. <b>Calculation of the sample concentration</b></li> <li>3.2. <b>Calculation of the reagent concentration</b></li> <li>3.3. <b>Calculation of the standard concentration</b></li> <li>3.4. <b>Calculation of the blank concentration</b></li> </ul>     | <p>3. <b>Calculation</b></p> <ul style="list-style-type: none"> <li>3.1. <b>Calculation of the sample concentration</b></li> <li>3.2. <b>Calculation of the reagent concentration</b></li> <li>3.3. <b>Calculation of the standard concentration</b></li> <li>3.4. <b>Calculation of the blank concentration</b></li> </ul>     |

mode:

|          |       |            |           |
|----------|-------|------------|-----------|
| Min.:    | 0     | Unit:      | -         |
| Max.:    | 65535 | Data Type: | UInt16    |
| Default: | 0     | Change:    | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.24 Target value of position comparison 9**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-19h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.26 Attribute value of position comparison 9**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-1Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.27 Target value of position comparison 10**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-1Ch    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.29**
**Attribute value of position comparison 10**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-1Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.30**
**Target value of position comparison 11**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-1Fh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.32**
**Attribute value of position comparison 11**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-21h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.33**
**Target value of position comparison 12**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-22h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.35 Attribute value of position comparison 12**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-24h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.36 Target value of position comparison 13**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-25h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.38 Attribute value of position comparison 13**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-27h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.39 Target value of position comparison 14**

|       |             |                 |           |
|-------|-------------|-----------------|-----------|
| Hex:  | 2019-28h    | Effective mode: | Real time |
| Min.: | -2147483648 | Unit:           | -         |
| Max.: | 2147483647  | Data Type:      | Int32     |



|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-2Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

See H19.02.

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-2Bh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

—

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-2Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

See H19.02.

|          |             |            |           |
|----------|-------------|------------|-----------|
| Min.:    | -2147483648 | Unit:      | -         |
| Max.:    | 2147483647  | Data Type: | Int32     |
| Default: | 0           | Change:    | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.47 Attribute value of position comparison 16**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-30h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.48 Target value of position comparison 17**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-31h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.50 Attribute value of position comparison 17**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-33h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.51 Target value of position comparison 18**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-34h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.53 Attribute value of position comparison 18**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-36h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.54 Target value of position comparison 19**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-37h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.56 Attribute value of position comparison 19**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-39h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.57 Target value of position comparison 20**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-3Ah    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.59 Attribute value of position comparison 20**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-3Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.60 Target value of position comparison 21**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-3Dh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.62 Attribute value of position comparison 21**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2019-3Fh | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 65535    | Data Type:      | UInt16    |

Change: Real-time

See H19.02.

See H19.02.

**H19.63 Target value of position comparison 22**

|           |           |
|-----------|-----------|
| Effective | Real time |
| mode:     |           |

Unit: -

Data Type: Int32

Change: Real-time

-2147483648-2147483647

—

**H19.65**      **Attribute value of position comparison 22**

Effective      Real time  
mode:

Unit: -

Data Type: UInt16

Change: Real-time

See H19.02.

See H19.02.

**H19.66 Target value of position comparison 23**

Effective      Real time  
mode:

Unit: -

Data Type: Int32

Change: Real-time

-2147483648-2147483647

—

**H19.68**      **Attribute value of position comparison 23**

Effective      Real time  
mode:

|          |       |            |           |
|----------|-------|------------|-----------|
| Min.:    | 0     | Unit:      | -         |
| Max.:    | 65535 | Data Type: | UInt16    |
| Default: | 0     | Change:    | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.69 Target value of position comparison 24**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-46h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.71 Attribute value of position comparison 24**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-48h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.72 Target value of position comparison 25**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-49h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.74****Attribute value of position comparison 25**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-4Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.75****Target value of position comparison 26**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-4Ch    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.77****Attribute value of position comparison 26**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-4Eh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.78****Target value of position comparison 27**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-4Fh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.80 Attribute value of position comparison 27**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-51h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.81 Target value of position comparison 28**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-52h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.83 Attribute value of position comparison 28**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-54h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.84 Target value of position comparison 29**

|       |             |                 |           |
|-------|-------------|-----------------|-----------|
| Hex:  | 2019-55h    | Effective mode: | Real time |
| Min.: | -2147483648 | Unit:           | -         |
| Max.: | 2147483647  | Data Type:      | Int32     |



|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-57h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-58h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-5Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

|          |             |            |           |
|----------|-------------|------------|-----------|
| Min.:    | -2147483648 | Unit:      | -         |
| Max.:    | 2147483647  | Data Type: | Int32     |
| Default: | 0           | Change:    | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.92 Attribute value of position comparison 31**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-5Dh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.93 Target value of position comparison 32**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-5Eh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.95 Attribute value of position comparison 32**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-60h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.96 Target value of position comparison 33**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-61h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.98 Attribute value of position comparison 33**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-63h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.99 Target value of position comparison 34**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-64h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.101 Attribute value of position comparison 34**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-66h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.102 Target value of position comparison 35**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-67h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.104 Attribute value of position comparison 35**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-69h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.105 Target value of position comparison 36**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-6Ah    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.107 Attribute value of position comparison 36**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2019-6Ch | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 65535    | Data Type:      | UInt16    |

Default: 0

Change: Real-time

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.108 Target value of position comparison 37**

Hex: 2019-6Dh

Effective mode: Real time

Min.: -2147483648

Unit: -

Max.: 2147483647

Data Type: Int32

Default: 0

Change: Real-time

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.110 Attribute value of position comparison 37**

Hex: 2019-6Fh

Effective mode: Real time

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.111 Target value of position comparison 38**

Hex: 2019-70h

Effective mode: Real time

Min.: -2147483648

Unit: -

Max.: 2147483647

Data Type: Int32

Default: 0

Change: Real-time

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.113 Attribute value of position comparison 38**

Hex: 2019-72h

Effective mode: Real time

|          |       |            |           |
|----------|-------|------------|-----------|
| Min.:    | 0     | Unit:      | -         |
| Max.:    | 65535 | Data Type: | UInt16    |
| Default: | 0     | Change:    | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.114 Target value of position comparison 39**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-73h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.116 Attribute value of position comparison 39**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-75h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

**H19.117 Target value of position comparison 40**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2019-76h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

-

**H19.119 Attribute value of position comparison 40**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2019-78h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

See H19.02.

**Description**

See H19.02.

## 4.23 H1F Software Parameters

**H1F.90 DI function state 1 read through communication**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 201F-5Bh | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Bit 0 corresponds to DI function 1.

Bit 1 corresponds to DI function 2.

Bit 2 corresponds to DI function 3.

...

By analogy

**H1F.91 DI function state 2 read through communication**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 201F-5Ch | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Bit 0 corresponds to DI function 17.

Bit 1 corresponds to DI function 18.

Bit 2 corresponds to DI function 19.

...

By analogy

**H1F.92 DI function state 3 read through communication**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 201F-5Dh | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Bit 0 corresponds to DI function 33.

Bit 1 corresponds to DI function 34.

Bit 2 corresponds to DI function 35.

...

By analogy

**H1F.93 DI function state 4 read through communication**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 201F-5Eh | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Bit 0 corresponds to DI function 49.

Bit 1 corresponds to DI function 50.

Bit 2 corresponds to DI function 51.

...

By analogy

**H1F.94 DO function state 1 read through communication**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 201F-5Fh | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535



**Description**

Bit 0 corresponds to DO function 1.

Bit 1 corresponds to DO function 2.

Bit 2 corresponds to DO function 3.

...

By analogy

**H1F.95 DO function state 2 read through communication**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 201F-60h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Bit 0 corresponds to DO function 17.

Bit 1 corresponds to DO function 18.

Bit 2 corresponds to DO function 19.

...

By analogy

**H1F.95 Default speed of usability operation**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 201F-1Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 1000     | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

Default speed of usability operation

## 4.24 H21 Current Loop Gain Switchover Parameters

**H21.00 Current loop gain switchover**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2021-01h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 1        | Data Type:      | UInt16    |

Default: 0

Change: Real-time

**Value Range:**

0: No operation

1: Enabled

**Description**

Used to enable or disable the current loop gain switchover function.

0: No operation, turned off

1: Enabled, turned on

## 4.25 H22 Technology Segment Parameters

### H22.00 Process segment command trigger

Hex: 2022-01h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 1000

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0–1000

**Description**

Used to trigger the process segment. The process segment can be triggered through the keypad or communication.

The homing function is triggered when 0 is written to H22.00.

Process segments 1 to 15 are triggered when 1 to 15 are written to H22.00.

The process segment pauses when 1000 is written to H22.00.

E126.0 (Process segment number error) will be reported when 16 to 999 are written to H22.00.

### H22.01 Process segment triggered by the event rising edge

Hex: 2022-02h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: Real-time

**Value Range:**

0–65535

**Description**

DI: ProceEvTri (OFF to ON, rising edge-triggered).

0–3bit: When its value is 0, DI is triggered: The motor does not operate during ProceEvTri1 rising edge. When its value is 1–15, DI is triggered: Process segment 1–15 is executed during ProceEvTri1 rising edge.

4–7bit: When its value is 0, DI is triggered: The motor does not operate during ProceEvTri2 rising edge. When its value is 1–15, DI is triggered: Process segments 1–15 are executed during ProceEvTri2 rising edge.

8–11bit: When its value is 0, DI is triggered: The motor does not operate during ProceEvTri3 rising edge. When its value is 1–15, DI is triggered: Process segments 1–15 are executed during ProceEvTri3 rising edge.

12–15bit: When its value is 0, DI is triggered: The motor does not operate during ProceEvTri4 rising edge. When its value is 1–15, DI is triggered: Process segments 1–15 are executed during ProceEvTri4 rising edge.

## H22.02 Process segment triggered by the event falling edge

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-03h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

### Value Range:

0–65535

### Description

DI: ProceEvTri (ON to OFF, falling edge-triggered).

0–3bit: When its value is 0, DI is triggered: The motor does not operate during ProceEvTri1 falling edge. When its value is 1–15, DI is triggered: Process segment 1–15 is executed during ProceEvTri1 falling edge.

4–7bit: When its value is 0, DI is triggered: The motor does not operate during ProceEvTri2 falling edge. When its value is 1–15, DI is triggered: Process segments 1–15 are executed during ProceEvTri2 falling edge.

8–11bit: When its value is 0, DI is triggered: The motor does not operate during ProceEvTri3 falling edge. When its value is 1–15, DI is triggered: Process segments 1–15 are executed during ProceEvTri3 falling edge.

12–15bit: When its value is 0, DI is triggered: The motor does not operate during ProceEvTri4 falling edge. When its value is 1–15, DI is triggered: Process segments 1–15 are executed during ProceEvTri4 falling edge.

## H22.03 Acceleration/Deceleration time upon technology segment pause

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2022-04h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |

|          |   |            |           |
|----------|---|------------|-----------|
| Max.:    | 7 | Data Type: | UInt16    |
| Default: | 0 | Change:    | Real-time |

**Value Range:**

0: Acceleration/Deceleration time  
 1: Acceleration/Deceleration time 1  
 2: Acceleration/Deceleration time 2  
 3: Acceleration/Deceleration time 3  
 4: Acceleration/Deceleration time 4  
 5: Acceleration/Deceleration time 5  
 6: Acceleration/Deceleration time 6  
 7: Acceleration/Deceleration time 7

**Description**

When the process segment is paused, the motor ramps to stop based on the deceleration time defined by H22.03. Setpoints 0 to 7 correspond to parameters H22.35 to H22.42.

**H22.04 Positive software position limit**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2022-05h    | Effective mode: | Real time      |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | 2147483647  | Change:         | Real-time      |

**Value Range:**

-2147483648 to 2147483647

**Description**

E956.0 can occur when the motor operates forwardly with position reference exceeding the setpoint of H22.04 during positioning in the process segment mode.

**H22.06 Negative software position limit**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2022-07h    | Effective mode: | Real time      |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | -2147483648 | Change:         | Real-time      |

**Value Range:**

-2147483648 to 2147483647

**Description**

E958.0 can occur when the motor operates reversely with position reference exceeding the setpoint of H22.06 during positioning in the process segment mode.

|               |                                                                               |                 |              |
|---------------|-------------------------------------------------------------------------------|-----------------|--------------|
| <b>H22.08</b> | <b>Process segment number</b>                                                 |                 |              |
| Hex:          | 2022-09h                                                                      | Effective mode: | -            |
| Min.:         | 0                                                                             | Unit:           | -            |
| Max.:         | 65535                                                                         | Data Type:      | UInt16       |
| Default:      | 0                                                                             | Change:         | Unchangeable |
|               | <b>Value Range:</b>                                                           |                 |              |
|               | 0–65535                                                                       |                 |              |
|               | <b>Description</b>                                                            |                 |              |
|               | Indicates the process segment number in progress in the process segment mode. |                 |              |

|               |                                                                        |                 |           |
|---------------|------------------------------------------------------------------------|-----------------|-----------|
| <b>H22.09</b> | <b>Process segment function switch</b>                                 |                 |           |
| Hex:          | 2022-0Ah                                                               | Effective mode: | Real time |
| Min.:         | 0                                                                      | Unit:           | -         |
| Max.:         | 65535                                                                  | Data Type:      | UInt16    |
| Default:      | 0                                                                      | Change:         | At stop   |
|               | <b>Value Range:</b>                                                    |                 |           |
|               | 0–65535                                                                |                 |           |
|               | <b>Description</b>                                                     |                 |           |
|               | Bit0:                                                                  |                 |           |
|               | 0: Keep interrupt positioning state                                    |                 |           |
|               | 1: Exit interrupt positioning state when triggering technology segment |                 |           |

|               |                                                                                                                                                   |                 |              |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------|
| <b>H22.10</b> | <b>Process segment state</b>                                                                                                                      |                 |              |
| Hex:          | 2022-0Bh                                                                                                                                          | Effective mode: | -            |
| Min.:         | 0                                                                                                                                                 | Unit:           | -            |
| Max.:         | 65535                                                                                                                                             | Data Type:      | UInt16       |
| Default:      | 0                                                                                                                                                 | Change:         | Unchangeable |
|               | <b>Value Range:</b>                                                                                                                               |                 |              |
|               | 0–65535                                                                                                                                           |                 |              |
|               | <b>Description</b>                                                                                                                                |                 |              |
|               | Used for process segment state feedback.                                                                                                          |                 |              |
|               | The process segment number will be read back when commands in the positioning mode are not done executing.                                        |                 |              |
|               | The process segment number + 10000 will be read back when commands in the positioning mode are done executing.                                    |                 |              |
|               | The process segment number + 20000 will be read back when commands in the positioning mode are done executing and positioning has been completed. |                 |              |

**H22.19****Target speed**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-14h | Effective mode: | Real time    |
| Min.:    | 0.1      | Unit:           | [mm/s]/[rpm] |
| Max.:    | 6000.0   | Data Type:      | UInt16       |
| Default: | 50.0     | Change:         | Real-time    |

**Value Range:**

0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm]

**Description**

Eight groups of target speed are available for each process segment command. Target speed refers to the constant operating speed when the motor is not in the acceleration/deceleration process. If the displacement is too small in the positioning mode, the actual motor speed will be lower than the setpoint of H22.19.

**H22.20****Target speed 1**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-15h | Effective mode: | Real time    |
| Min.:    | 0.1      | Unit:           | [mm/s]/[rpm] |
| Max.:    | 6000.0   | Data Type:      | UInt16       |
| Default: | 200.0    | Change:         | Real-time    |

**Value Range:**

0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm]

**Description**

See H22.19.

**H22.21****Target speed 2**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-16h | Effective mode: | Real time    |
| Min.:    | 0.1      | Unit:           | [mm/s]/[rpm] |
| Max.:    | 6000.0   | Data Type:      | UInt16       |
| Default: | 500.0    | Change:         | Real-time    |

**Value Range:**

0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm]

**Description**

See H22.19.

**H22.22****Target speed 3**

|       |          |                 |              |
|-------|----------|-----------------|--------------|
| Hex:  | 2022-17h | Effective mode: | Real time    |
| Min.: | 0.1      | Unit:           | [mm/s]/[rpm] |

|          |        |            |           |
|----------|--------|------------|-----------|
| Max.:    | 6000.0 | Data Type: | UInt16    |
| Default: | 1000.0 | Change:    | Real-time |

**Value Range:**

0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm]

**Description**

See H22.19.

**H22.23 Target speed 4**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-18h | Effective mode: | Real time    |
| Min.:    | 0.1      | Unit:           | [mm/s]/[rpm] |
| Max.:    | 6000.0   | Data Type:      | UInt16       |
| Default: | 1500.0   | Change:         | Real-time    |

**Value Range:**

0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm]

**Description**

See H22.19.

**H22.24 Target speed 5**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-19h | Effective mode: | Real time    |
| Min.:    | 0.1      | Unit:           | [mm/s]/[rpm] |
| Max.:    | 6000.0   | Data Type:      | UInt16       |
| Default: | 2000.0   | Change:         | Real-time    |

**Value Range:**

0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm]

**Description**

See H22.19.

**H22.25 Target speed 6**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-1Ah | Effective mode: | Real time    |
| Min.:    | 0.1      | Unit:           | [mm/s]/[rpm] |
| Max.:    | 6000.0   | Data Type:      | UInt16       |
| Default: | 2500.0   | Change:         | Real-time    |

**Value Range:**

0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm]

**Description**

See H22.19.

**H22.26 Target speed 7**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2022-1Bh | Effective mode: | Real time    |
| Min.:    | 0.1      | Unit:           | [mm/s]/[rpm] |
| Max.:    | 6000.0   | Data Type:      | UInt16       |
| Default: | 3000.0   | Change:         | Real-time    |

**Value Range:**

0.1[mm/s]/[rpm]–6000.0[mm/s]/[rpm]

**Description**

See H22.19.

**H22.35 Accel/Decel time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-24h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 50       | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Eight groups of acceleration/deceleration time are available for each process segment command.

Acceleration/Deceleration time refers to the time for the motor to change from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm] at a constant speed.

**H22.36 Acceleration/Deceleration time 1**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-25h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 200      | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

See H22.35.

**H22.37 Acceleration/Deceleration time 2**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2022-26h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | ms        |
| Max.: | 65535    | Data Type:      | UInt16    |



|                     |     |         |           |
|---------------------|-----|---------|-----------|
| Default:            | 500 | Change: | Real-time |
| <b>Value Range:</b> |     |         |           |
| 0 ms to 65535 ms    |     |         |           |
| <b>Description</b>  |     |         |           |
| See H22.35.         |     |         |           |

**H22.38 Acceleration/Deceleration time 3**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2022-27h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | ms        |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 1000     | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0 ms to 65535 ms    |          |                 |           |
| <b>Description</b>  |          |                 |           |
| See H22.35.         |          |                 |           |

**H22.39 Acceleration/Deceleration time 4**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2022-28h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | ms        |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 1500     | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0 ms to 65535 ms    |          |                 |           |
| <b>Description</b>  |          |                 |           |
| See H22.35.         |          |                 |           |

**H22.40 Acceleration/Deceleration time 5**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2022-29h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | ms        |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 2000     | Change:         | Real-time |
| <b>Value Range:</b> |          |                 |           |
| 0 ms to 65535 ms    |          |                 |           |
| <b>Description</b>  |          |                 |           |
| See H22.35.         |          |                 |           |

**H22.41 Acceleration/Deceleration time 6**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2022-2Ah | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |       |            |           |
|----------|-------|------------|-----------|
| Min.:    | 0     | Unit:      | ms        |
| Max.:    | 65535 | Data Type: | UInt16    |
| Default: | 2500  | Change:    | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

See H22.35.

**H22.42 Acceleration/Deceleration time 7**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-2Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 3000     | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

See H22.35.

**H22.51 Delay after completion of the process segment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-34h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Eight groups of delay time are available for each process segment command.

The delay time refers to the delay that starts from the end of current command to the operation of the next command in the process segment. For details, see the Function Guide.

**H22.52 Delay time 1 after completion of the process segment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-35h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 50       | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

See H22.51.

**H22.53      Delay time 2 after completion of the process segment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-36h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 200      | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

See H22.51.

**H22.54      Delay time 3 after completion of the process segment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-37h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 500      | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

See H22.51.

**H22.55      Delay time 4 after completion of the process segment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-38h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 1000     | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

See H22.51.

**H22.56      Delay time 5 after completion of the process segment**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2022-39h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | ms        |
| Max.: | 65535    | Data Type:      | UInt16    |

Default: 1500

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

See H22.51.

**H22.57 Delay time 6 after completion of the process segment**

Hex: 2022-3Ah

Effective Real time  
mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 2000

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

See H22.51.

**H22.58 Delay time 7 after completion of the process segment**

Hex: 2022-3Bh

Effective Real time  
mode:

Min.: 0

Unit: ms

Max.: 65535

Data Type: UInt16

Default: 3000

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

See H22.51.

**H22.70 Homing mode**

Hex: 2022-47h

Effective Real time  
mode:

Min.: -32768

Unit: -

Max.: 32767

Data Type: Int16

Default: -2

Change: Real-time

**Value Range:**

-32768–32767

**Description**

Defines the default motor direction of rotation, deceleration point, and home during homing.

When H22.70 is set to a value from –2 to +35, 402 homing is used (6098h set to a value from –2 to +35). See section "Homing Function" in the Function Guide for details.

When H22.70 is set to a value lower than or equal to –200, local homing is used (H22.70 set to  $(-200 + H05.31)$ ). See section "Homing Function" in the Function Guide for details.

### **H22.71      Speed of high-speed search for home switch signal**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2022-48h | Effective  | Real time    |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | [mm/s]/[rpm] |
| Max.:    | 3000     | Data Type: | UInt16       |
| Default: | 100      | Change:    | Real-time    |

#### **Value Range:**

0[mm/s]/[rpm]–3000[mm/s]/[rpm]

#### **Description**

Defines the motor speed for searching for the deceleration point signal during homing.

### **H22.72      Speed of low-speed search for home switch signal**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2022-49h | Effective  | Real time    |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | [mm/s]/[rpm] |
| Max.:    | 1000     | Data Type: | UInt16       |
| Default: | 10       | Change:    | Real-time    |

#### **Value Range:**

0[mm/s]/[rpm]–1000[mm/s]/[rpm]

#### **Description**

Defines the motor speed for searching for the home signal during homing.

### **H22.73      Acceleration/Deceleration time during homing**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2022-4Ah | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | ms        |
| Max.:    | 1000     | Data Type: | UInt16    |
| Default: | 1000     | Change:    | Real-time |

#### **Value Range:**

0 ms to 1000 ms

#### **Description**

Defines the time for the motor to accelerate from 0 [mm/s]/[rpm] to 1000 [mm/s]/[rpm] at a constant speed during homing.

**H22.74 Home search time limit**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-4Bh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 10000    | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Defines the maximum homing time.

**H22.75 Mechanical home offset**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 2022-4Ch    | Effective mode: | Real time      |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | 0           | Change:         | Real-time      |

**Value Range:**

-2147483648 to 2147483647

**Description**

Defines the absolute position of the motor after homing.

**H22.79 Relative/Absolute homing**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-50h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

Defines the offset relationship between the mechanical home and mechanical zero point, and the action upon overtravel during homing.

When H22.79 is set to 0, the value of H05.40 is 2.

When H22.79 is set to 1, the value of H05.40 is 3.

**H22.83 Jump count threshold**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-54h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65534    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–65534

**Description**

Eight jump count thresholds are provided for each process segment command. Jump count threshold: There are two jump process segments for the jump command. When the cumulative number of jumps executed by the jump command is lower than the jump count threshold, you will jump to process segment A, otherwise jump to process segment B. For details, see section 2.2.

**H22.84 Jump count threshold 1**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-55h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65534    | Data Type:      | UInt16    |
| Default: | 20       | Change:         | Real-time |

**Value Range:**

0–65534

**Description**

See H22.83.

**H22.85 Jump count threshold 2**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-56h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65534    | Data Type:      | UInt16    |
| Default: | 40       | Change:         | Real-time |

**Value Range:**

0–65534

**Description**

See H22.83.

**H22.86 Jump count threshold 3**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2022-57h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65534    | Data Type:      | UInt16    |
| Default: | 80       | Change:         | Real-time |

**Value Range:**

0–65534

**Description**

See H22.83.

**H22.87 Jump count threshold 4**

Hex: 2022-58h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 65534

Data Type: UInt16

Default: 160

Change: Real-time

**Value Range:**

0–65534

**Description**

See H22.83.

**H22.88 Jump count threshold 5**

Hex: 2022-59h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 65534

Data Type: UInt16

Default: 320

Change: Real-time

**Value Range:**

0–65534

**Description**

See H22.83.

**H22.89 Jump count threshold 6**

Hex: 2022-5Ah

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 65534

Data Type: UInt16

Default: 640

Change: Real-time

**Value Range:**

0–65534

**Description**

See H22.83.

**H22.90 Jump count threshold 7**

Hex: 2022-5Bh

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 65534

Data Type: UInt16

Default: 1280

Change: Real-time

**Value Range:**

0–65534



**Description**

See H22.83.

# 4.26 H23 Technology Segment

## H23.00 Definition of homing

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-01h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

For details, see section “Homing Mode” in the Function Guide.

## H23.02 Homing data

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-03h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

Not used.

## H23.04 Definition of process segment 1

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-05h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

bit0 to bit3: Mode (process segment operation mode option)  
 Mode = 1: The fixed speed mode applies. Mode = 2: The positioning mode applies, which stops after positioning is done. Mode = 3: The next segment is executed automatically after positioning is done. Mode = 7: The jump mode applies, which is used to jump to the designated process segment. Mode = 8: The parameter-write mode applies, which allows you to write specific parameters.  
 For details on each mode, see the Function Guide.

### H23.06 Data of process segment 1

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-07h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

#### Value Range:

-2147483648–2147483647

#### Description

Different modes selected in process segment 1 correspond to different process segment data. For details on each mode, see the Function Guide.

### H23.08 Definition of process segment 2

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-09h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

#### Value Range:

0–4294967295

#### Description

See definition of technology segment 1.

### H23.10 Data of process segment 2

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-0Bh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

#### Value Range:

-2147483648–2147483647

**Description**

See that of technology segment 1.

**H23.12 Definition of process segment 3**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-0Dh   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

See definition of technology segment 1.

**H23.14 Data of process segment 3**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-0Fh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

See that of technology segment 1.

**H23.16 Definition of process segment 4**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-11h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

See definition of technology segment 1.

**H23.18 Data of process segment 4**

|       |             |                 |           |
|-------|-------------|-----------------|-----------|
| Hex:  | 2023-13h    | Effective mode: | Real time |
| Min.: | -2147483648 | Unit:           | -         |
| Max.: | 2147483647  | Data Type:      | Int32     |

Default: 0 Change: Real-time  
**Value Range:**  
 -2147483648–2147483647  
**Description**  
 See that of technology segment 1.

## H23.20 Definition of process segment 5

Hex: 2023-15h Effective mode: Real time  
 mode:  
 Min.: 0 Unit: -  
 Max.: 4294967295 Data Type: UInt32  
 Default: 0 Change: Real-time  
**Value Range:**  
 0–4294967295  
**Description**  
 See definition of technology segment 1.

## H23.22 Data of process segment 5

Hex: 2023-17h Effective mode: Real time  
 mode:  
 Min.: -2147483648 Unit: -  
 Max.: 2147483647 Data Type: Int32  
 Default: 0 Change: Real-time  
**Value Range:**  
 -2147483648–2147483647  
**Description**  
 See that of technology segment 1.

## H23.24 Definition of process segment 6

Hex: 2023-19h Effective mode: Real time  
 mode:  
 Min.: 0 Unit: -  
 Max.: 4294967295 Data Type: UInt32  
 Default: 0 Change: Real-time  
**Value Range:**  
 0–4294967295  
**Description**  
 See definition of technology segment 1.

**H23.26 Data of process segment 6**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-1Bh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

See that of technology segment 1.

**H23.28 Definition of process segment 7**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-1Dh   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

See definition of technology segment 1.

**H23.30 Data of process segment 7**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-1Fh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

See that of technology segment 1.

**H23.32 Definition of process segment 8**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-21h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

See definition of technology segment 1.

**H23.34 Data of process segment 8**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-23h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

See that of technology segment 1.

**H23.36 Definition of process segment 9**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-25h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

See definition of technology segment 1.

**H23.38 Data of process segment 9**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-27h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

See that of technology segment 1.

**H23.40 Definition of process segment 10**

|       |            |                 |           |
|-------|------------|-----------------|-----------|
| Hex:  | 2023-29h   | Effective mode: | Real time |
| Min.: | 0          | Unit:           | -         |
| Max.: | 4294967295 | Data Type:      | UInt32    |

|                                         |   |         |           |
|-----------------------------------------|---|---------|-----------|
| Default:                                | 0 | Change: | Real-time |
| <b>Value Range:</b>                     |   |         |           |
| 0–4294967295                            |   |         |           |
| <b>Description</b>                      |   |         |           |
| See definition of technology segment 1. |   |         |           |

**H23.42      Data of process segment 10**

|                                   |             |                 |           |
|-----------------------------------|-------------|-----------------|-----------|
| Hex:                              | 2023-2Bh    | Effective mode: | Real time |
| Min.:                             | -2147483648 | Unit:           | -         |
| Max.:                             | 2147483647  | Data Type:      | Int32     |
| Default:                          | 0           | Change:         | Real-time |
| <b>Value Range:</b>               |             |                 |           |
| -2147483648–2147483647            |             |                 |           |
| <b>Description</b>                |             |                 |           |
| See that of technology segment 1. |             |                 |           |

**H23.44      Definition of process segment 11**

|                                         |            |                 |           |
|-----------------------------------------|------------|-----------------|-----------|
| Hex:                                    | 2023-2Dh   | Effective mode: | Real time |
| Min.:                                   | 0          | Unit:           | -         |
| Max.:                                   | 4294967295 | Data Type:      | UInt32    |
| Default:                                | 0          | Change:         | Real-time |
| <b>Value Range:</b>                     |            |                 |           |
| 0–4294967295                            |            |                 |           |
| <b>Description</b>                      |            |                 |           |
| See definition of technology segment 1. |            |                 |           |

**H23.46      Data of process segment 11**

|                                   |             |                 |           |
|-----------------------------------|-------------|-----------------|-----------|
| Hex:                              | 2023-2Fh    | Effective mode: | Real time |
| Min.:                             | -2147483648 | Unit:           | -         |
| Max.:                             | 2147483647  | Data Type:      | Int32     |
| Default:                          | 0           | Change:         | Real-time |
| <b>Value Range:</b>               |             |                 |           |
| -2147483648–2147483647            |             |                 |           |
| <b>Description</b>                |             |                 |           |
| See that of technology segment 1. |             |                 |           |

**H23.48 Definition of process segment 12**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-31h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

See definition of technology segment 1.

**H23.50 Data of process segment 12**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-33h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

See that of technology segment 1.

**H23.52 Definition of process segment 13**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-35h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

See definition of technology segment 1.

**H23.54 Data of process segment 13**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-37h    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647



**Description**

See that of technology segment 1.

**H23.56 Definition of process segment 14**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-39h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

See definition of technology segment 1.

**H23.58 Data of process segment 14**

|          |             |                 |           |
|----------|-------------|-----------------|-----------|
| Hex:     | 2023-3Bh    | Effective mode: | Real time |
| Min.:    | -2147483648 | Unit:           | -         |
| Max.:    | 2147483647  | Data Type:      | Int32     |
| Default: | 0           | Change:         | Real-time |

**Value Range:**

-2147483648–2147483647

**Description**

See that of technology segment 1.

**H23.60 Definition of process segment 15**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 2023-3Dh   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

See definition of technology segment 1.

**H23.62 Data of process segment 15**

|       |             |                 |           |
|-------|-------------|-----------------|-----------|
| Hex:  | 2023-3Fh    | Effective mode: | Real time |
| Min.: | -2147483648 | Unit:           | -         |
| Max.: | 2147483647  | Data Type:      | Int32     |

Default: 0

Change: Real-time

**Value Range:**

-2147483648–2147483647

**Description**

See that of technology segment 1.

## 4.27 H30 Related Variables Read through Communication

### H30.00 Servo state read by communication

Hex: 2030-01h

Effective -

mode:

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: Unchangeable

**Value Range:**

0–65535

**Description**

-

### H30.01 DO function state 1 read through communication

Hex: 2030-02h

Effective -

mode:

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: Unchangeable

**Value Range:**

0–65535

**Description**

Bit 0 corresponds to DO function 1.

Bit 1 corresponds to DO function 2.

Bit 2 corresponds to DO function 3.

...

By analogy

### H30.02 DO function state 2 read through communication

Hex: 2030-03h

Effective -

mode:

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: Unchangeable

**Value Range:**

0–65535

**Description**

Bit 0 corresponds to DO function 17.

Bit 1 corresponds to DO function 18.

Bit 2 corresponds to DO function 19.

...

By analogy

**H30.16      1st encoder communication timeout count**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2030-11h | Effective mode: | N/A          |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

It indicates the total number of communication timeout errors of the first encoder after the latest power-on.

**H30.17      1st encoder communication CRC error count**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2030-12h | Effective mode: | N/A          |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

It indicates the total number of communication CRC errors of the first encoder after the latest power-on.

**H30.18      1st encoder communication frame stop bit error count**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2030-13h | Effective mode: | N/A          |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

It indicates the total number of communication frame stop bit errors of the encoder after the latest power-on.

**4.28 H31 Communication Setting****H31.00 VDI virtual level set through communication**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2031-01h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

When H17.90 is set to 1, the VDI state is defined by this parameter.

The VDI logic is determined by H17.91 (Default VDI virtual level value upon power-on) upon initial power-on. Then, H31.00 is determined by the VDI logic. "bit(n) = 1" of H31.00 indicates the logic of VDI (n+1) is "1". "bit(n)=0" indicates the logic of VDI (n+1) is "0".

**H31.01 Frequency-division output frequency set through communication**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2031-02h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | Hz        |
| Max.:    | 16000000 | Data Type:      | UInt32    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0 Hz–16000000 Hz

**Description**

When H05.38 is set to 4, H31.01 sets the frequency of the frequency division output port.

**H31.04 DO state set through communication**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2031-05h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

Sets DO output status.

**H31.05 AO set through communication**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2031-06h | Effective mode: | Real time |
| Min.:    | -10000   | Unit:           | mV        |
| Max.:    | 10000    | Data Type:      | Int16     |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

-10000 mV–10000 mV

**Description**

Set H04.50 to 10 to define AO through H31.05 (in mV).

**H31.09 Speed reference set via communication**

|          |           |                 |              |
|----------|-----------|-----------------|--------------|
| Hex:     | 2031-0Ah  | Effective mode: | Real time    |
| Min.:    | -9999.000 | Unit:           | [mm/s]/[rpm] |
| Max.:    | 9999.000  | Data Type:      | Int32        |
| Default: | 0.000     | Change:         | Real-time    |

**Value Range:**

-9999.000[mm/s]/[rpm]–9999.000[mm/s]/[rpm]

**Description**

Set H06.02 to 4 to define the speed reference in the speed control mode (unit: 0.001 [mm/s]/[rpm]).

**H31.11 Torque reference set via communication**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2031-0Ch | Effective mode: | Real time |
| Min.:    | -100.000 | Unit:           | %         |
| Max.:    | 100.000  | Data Type:      | Int32     |
| Default: | 0.000    | Change:         | Real-time |

**Value Range:**

-100.000% to 100.000%

**Description**

Set H07.02 to 4 to define the torque reference in the torque control mode through H31.11 (unit: 0.001%). The setpoint 100.000% corresponds to the rated torque of the motor.

## 4.29 H32 Direct Drive Parameters

### H32.00 Encoder interpolator mismatch alarm (E124)

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-01h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 1        | Change:         | At stop   |

#### Value Range:

0: Disabled

1: Enabled

#### Description

The T2 interpolator matches the HipeFace encoder. The power-on check switch is turned on by default.

### H32.01 Encoder interface switchover switch

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2032-02h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

#### Value Range:

0: Default encoder interface

1: Switching encoder interface

#### Description

-

### H32.02 Angle auto-tuning upon power-on

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-03h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

#### Value Range:

0: Disabled

1: Enabled

#### Description

Angle auto-tuning starts after the drive switches to the rdy state and the time defined by H32.41 elapses.

**H32.03      Angle auto-tuning switch controlled by control word**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2032-04h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 2        | Data Type: | UInt16    |
| Default: | 0        | Change:    | At stop   |

**Value Range:**

- 0: Disabled
- 1: Control word 6
- 2: Control word 7

**Description**

Used to enable the angle auto-tuning switchover switch through the control word.

**H32.04      Angle auto-tuning state**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2032-05h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 65535    | Data Type: | UInt16    |
| Default: | 0        | Change:    | At stop   |

**Value Range:**

- bit0: bit7 of 6041
- bit1: E602.9

**Description**

When the incremental encoder is not angle auto-tuned, it will raise an alarm or provide a status bit based on the setting. When bit0 and bit1 are both set, only bit0 is effective.

**H32.05      Pre-positioning retract selection**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2032-06h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 65535    | Data Type: | UInt16    |
| Default: | 0        | Change:    | At stop   |

**Value Range:**

- 0: Disabled
- 1: Enabled

**Description**

Used to retract by a certain distance after auto-tuning through pre-positioning is done.

**H32.06 Position feedback**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2032-07h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 1        | Data Type: | UInt16    |
| Default: | 0        | Change:    | At stop   |

**Value Range:**

0: Disabled

1: Enabled

**Description**

Used to align the position feedback to the position before angle auto-tuning for incremental encoders.

**H32.07 Incremental homing method**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2032-08h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 0        | Unit:      | -         |
| Max.:    | 9        | Data Type: | UInt16    |
| Default: | 1        | Change:    | At stop   |

**Value Range:**

0: Z Signal short circuit

1: Only first short circuit

**Description**

Selects the Z signal for Z signal homing of an incremental communication encoder. Z signal width is set according to H32.08.

**H32.08 Homing signal width**

|          |          |            |           |
|----------|----------|------------|-----------|
| Hex:     | 2032-09h | Effective  | Real time |
|          |          | mode:      |           |
| Min.:    | 100      | Unit:      | -         |
| Max.:    | 65535    | Data Type: | UInt16    |
| Default: | 800      | Change:    | At stop   |

**Value Range:**

100–65535

**Description**

The setpoint is active after the position is latched by Z signal.

**H32.10 Max. reference current in angle auto-tuning through inching**

|       |          |            |         |
|-------|----------|------------|---------|
| Hex:  | 2032-0Bh | Effective  | At stop |
|       |          | mode:      |         |
| Min.: | 10.0     | Unit:      | %       |
| Max.: | 300.0    | Data Type: | UInt16  |



Default: 100.0

Change: At stop

**Value Range:**

10.0% to 300.0%

**Description**

Defines the maximum reference current during auto-tuning.

**H32.13 Motor operation threshold (ROT/DDR) in angle auto-tuning through inching**

Hex: 2032-0Eh

Effective mode: At stop

Min.: 0.001

Unit: deg

Max.: 20.000

Data Type: UInt16

Default: 0.200

Change: At stop

**Value Range:**

0.001deg to 20.000deg

**Description**

Sets motor operation threshold for position lock angle auto-tuning. Usually no change is required. If you have special requirements for the operation range, you can adjust this parameter accordingly. The smaller the value, the smaller the operation range during auto-tuning, but the greater the auto-tuning error.

**H32.14 Motor standstill threshold (ROT/DDR) in angle auto-tuning through inching**

Hex: 2032-0Fh

Effective mode: At stop

Min.: 0.1

Unit: [mm/s]/[rpm]

Max.: 100.0

Data Type: UInt16

Default: 1.0

Change: At stop

**Value Range:**

0.1[mm/s]/[rpm]–100.0[mm/s]/[rpm]

**Description**

Sets motor stop threshold for auto-tuning. Usually no change is required.

**H32.15 Motor operation threshold (DDL) in angle auto-tuning through inching**

Hex: 2032-10h

Effective mode: At stop

Min.: 0.001

Unit: mm

Max.: 20.000

Data Type: UInt16

Default: 0.200

Change: At stop

**Value Range:**

0.001 millimeters–20.000 millimeters

**Description**

Sets motor operation threshold for position lock angle auto-tuning. Usually no change is required. If you have special requirements for the operation range, you can adjust this parameter accordingly. The smaller the value, the smaller the operation range during auto-tuning, but the greater the auto-tuning error.

**H32.16 Motor standstill threshold (DDL) in angle auto-tuning through inching**

|          |          |            |         |
|----------|----------|------------|---------|
| Hex:     | 2032-11h | Effective  | At stop |
|          |          | mode:      |         |
| Min.:    | 0.1      | Unit:      | mm/s    |
| Max.:    | 100.0    | Data Type: | UInt16  |
| Default: | 1.0      | Change:    | At stop |

**Value Range:**

0.1 mm/s–100.0 mm/s

**Description**

Sets motor stop threshold for auto-tuning. Usually no change is required.

**H32.18 Motor standstill threshold for inching angle auto-tuning**

|          |          |            |         |
|----------|----------|------------|---------|
| Hex:     | 2032-13h | Effective  | At stop |
|          |          | mode:      |         |
| Min.:    | 0.1      | Unit:      | s       |
| Max.:    | 10.0     | Data Type: | UInt16  |
| Default: | 0.5      | Change:    | At stop |

**Value Range:**

0.1s to 10.0s

**Description**

Sets motor standstill threshold for auto-tuning. Usually no change is required.

**H32.20 Max. reference current in angle auto-tuning through pre-positioning (closed-loop)**

|          |          |            |         |
|----------|----------|------------|---------|
| Hex:     | 2032-15h | Effective  | At stop |
|          |          | mode:      |         |
| Min.:    | 10.0     | Unit:      | %       |
| Max.:    | 300.0    | Data Type: | UInt16  |
| Default: | 100.0    | Change:    | At stop |

**Value Range:**

10.0% to 300.0%

**Description**

Defines the maximum reference current during auto-tuning.

**H32.22 Electrical angle reference in angle auto-tuning through pre-positioning (closed-loop)**

|          |          |                 |         |
|----------|----------|-----------------|---------|
| Hex:     | 2032-17h | Effective mode: | At stop |
| Min.:    | 0.0      | Unit:           | deg     |
| Max.:    | 360.0    | Data Type:      | UInt16  |
| Default: | 0.0      | Change:         | At stop |

**Value Range:**

0.0deg to 360.0deg

**Description**

Defines the electrical angle during auto-tuning through pre-positioning.

**H32.23 Electrical angle reference change range in angle auto-tuning through pre-positioning (closed-loop)**

|          |          |                 |         |
|----------|----------|-----------------|---------|
| Hex:     | 2032-18h | Effective mode: | At stop |
| Min.:    | 10.0     | Unit:           | deg     |
| Max.:    | 170.0    | Data Type:      | UInt16  |
| Default: | 90.0     | Change:         | At stop |

**Value Range:**

10.0deg to 170.0deg

**Description**

Defines the electrical angle change range during auto-tuning.

**H32.24 Motor stop threshold (ROT/DDR) in angle auto-tuning through pre-positioning (closed-loop)**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2032-19h | Effective mode: | At stop      |
| Min.:    | 0.1      | Unit:           | [mm/s]/[rpm] |
| Max.:    | 100.0    | Data Type:      | UInt16       |
| Default: | 1.0      | Change:         | At stop      |

**Value Range:**

0.1[mm/s]/[rpm]–100.0[mm/s]/[rpm]

**Description**

Sets motor stop threshold for auto-tuning. Usually no change is required.

**H32.25 Motor stop threshold (DDL) in angle auto-tuning through pre-positioning (closed-loop)**

|       |          |                 |         |
|-------|----------|-----------------|---------|
| Hex:  | 2032-1Ah | Effective mode: | At stop |
| Min.: | 0.1      | Unit:           | mm/s    |

|          |       |            |         |
|----------|-------|------------|---------|
| Max.:    | 100.0 | Data Type: | UInt16  |
| Default: | 1.0   | Change:    | At stop |

**Value Range:**

0.1 mm/s–100.0 mm/s

**Description**

Sets motor stop threshold for auto-tuning. Usually no change is required.

**H32.26 Damping in angle auto-tuning through pre-positioning (closed-loop)**

|          |          |                 |                             |
|----------|----------|-----------------|-----------------------------|
| Hex:     | 2032-1Bh | Effective mode: | At stop                     |
| Min.:    | 0.00     | Unit:           | $[N/(m/s)]/[N \cdot m/rpm]$ |
| Max.:    | 655.35   | Data Type:      | UInt16                      |
| Default: | 0.00     | Change:         | At stop                     |

**Value Range:**0.00 $[N/(m/s)]/[N \cdot m/rpm]$ –655.35 $[N/(m/s)]/[N \cdot m/rpm]$ **Description**

Sets the damping coefficient for motor auto-tuning. The appropriate coefficient ensures a smooth and impact-free operation.

(1) This coefficient is usually related to the load characteristics. Larger load requires a larger coefficient.

(2) When the coefficient is too small, the auto-tuning process may be prone to strong impact, which is normal. When it is too large, motor operation may be sluggish or even stops, which is also normal and a timeout alarm will be raised.

**H32.29 Motor standstill threshold for close-loop pre-positioning angle auto-tuning**

|          |          |                 |         |
|----------|----------|-----------------|---------|
| Hex:     | 2032-1Eh | Effective mode: | At stop |
| Min.:    | 0.1      | Unit:           | s       |
| Max.:    | 10.0     | Data Type:      | UInt16  |
| Default: | 0.5      | Change:         | At stop |

**Value Range:**

0.1s to 10.0s

**Description**

Sets motor standstill threshold for auto-tuning. Usually no change is required.

**H32.30 Max. reference current in angle auto-tuning through position lock**

|          |          |                 |         |
|----------|----------|-----------------|---------|
| Hex:     | 2032-1Fh | Effective mode: | At stop |
| Min.:    | 10.0     | Unit:           | %       |
| Max.:    | 300.0    | Data Type:      | UInt16  |
| Default: | 100.0    | Change:         | At stop |

**Value Range:**

10.0% to 300.0%

**Description**

Defines the maximum reference current during auto-tuning.

**H32.33 Motor operation threshold (ROT/DDR) in angle auto-tuning through position lock**

|          |          |                 |         |
|----------|----------|-----------------|---------|
| Hex:     | 2032-22h | Effective mode: | At stop |
| Min.:    | 0.001    | Unit:           | deg     |
| Max.:    | 20.000   | Data Type:      | UInt16  |
| Default: | 0.200    | Change:         | At stop |

**Value Range:**

0.001deg to 20.000deg

**Description**

Sets motor operation threshold for position lock angle auto-tuning. Usually no change is required. If you have special requirements for the operation range, you can adjust this parameter accordingly. The smaller the value, the smaller the operation range during auto-tuning, but the greater the auto-tuning error.

**H32.34 Motor standstill threshold (ROT/DDR) in angle auto-tuning through position lock**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2032-23h | Effective mode: | At stop      |
| Min.:    | 0.1      | Unit:           | [mm/s]/[rpm] |
| Max.:    | 100.0    | Data Type:      | UInt16       |
| Default: | 1.0      | Change:         | At stop      |

**Value Range:**

0.1[mm/s]/[rpm]–100.0[mm/s]/[rpm]

**Description**

Sets motor stop threshold for auto-tuning. Usually no change is required.

**H32.35 Motor operation threshold (DDL) in angle auto-tuning through position lock**

|          |          |                 |         |
|----------|----------|-----------------|---------|
| Hex:     | 2032-24h | Effective mode: | At stop |
| Min.:    | 0.001    | Unit:           | mm      |
| Max.:    | 20.000   | Data Type:      | UInt16  |
| Default: | 0.200    | Change:         | At stop |

**Value Range:**

0.001 millimeters–20.000 millimeters

### Description

Sets motor operation threshold for position lock angle auto-tuning. Usually no change is required. If you have special requirements for the operation range, you can adjust this parameter accordingly. The smaller the value, the smaller the operation range during auto-tuning, but the greater the auto-tuning error.

## H32.36 Motor standstill threshold (DDL) in angle auto-tuning through position lock

|          |          |                 |         |
|----------|----------|-----------------|---------|
| Hex:     | 2032-25h | Effective mode: | At stop |
| Min.:    | 0.1      | Unit:           | mm/s    |
| Max.:    | 100.0    | Data Type:      | UInt16  |
| Default: | 1.0      | Change:         | At stop |

### Value Range:

0.1 mm/s–100.0 mm/s

### Description

Sets motor stop threshold for auto-tuning. Usually no change is required.

## H32.37 Angle gain in angle auto-tuning through position lock

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-26h | Effective mode: | At stop   |
| Min.:    | 0        | Unit:           | deg/(p/s) |
| Max.:    | 10000    | Data Type:      | UInt16    |
| Default: | 1000     | Change:         | At stop   |

### Value Range:

0deg/(p/s)–10000deg/(p/s)

### Description

Defines the angle gain during auto-tuning. A proper setpoint improves the auto-tuning angle accuracy. The default value applies to most of applications.

## H32.38 Inertia ratio in angle auto-tuning through position lock

|          |          |                 |         |
|----------|----------|-----------------|---------|
| Hex:     | 2032-27h | Effective mode: | At stop |
| Min.:    | 0.00     | Unit:           | -       |
| Max.:    | 120.00   | Data Type:      | UInt16  |
| Default: | 0.00     | Change:         | At stop |

### Value Range:

0.00–120.00

### Description

Sets the inertia ratio gain for auto-tuning. A proper value can ensure smooth and jitter-free operation and reduce the operation range.

(1) This coefficient is usually related to the load characteristics. You can just set it to the actual inertia ratio.

(2) A small value may lead to long movement during auto-tuning, which is a normal phenomenon. A large value may lead to gain mismatch oscillation.

### **H32.39 Gain class in angle auto-tuning through position lock**

|          |          |                 |         |
|----------|----------|-----------------|---------|
| Hex:     | 2032-28h | Effective mode: | At stop |
| Min.:    | 4        | Unit:           | level   |
| Max.:    | 31       | Data Type:      | UInt16  |
| Default: | 16       | Change:         | At stop |

#### **Value Range:**

4level to 31level

#### **Description**

Defines the loop stiffness level gain for auto-tuning. A proper value can ensure smooth and jitter-free operation and reduce the operation range.

(1) A small value may lead to long movement during auto-tuning, which is a normal phenomenon. A large value may lead to gain mismatch oscillation.

### **H32.40 Left/Right limit function**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-29h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

#### **Value Range:**

1. Left limit being positive
2. Left limit being negative

#### **Description**

Enables the left and right limit function for the motor. If the left limit is positive, the right limit is negative, and if the left limit is negative, the right limit is positive.

### **H32.41 Angle auto-tuning delay upon power-on**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-2Ah | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 3        | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

-

**H32.45****Black box channel**

Hex: 2032-2Eh

Effective mode: Real time

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0–1

**Description**

-

**H32.50****32-bit range compatibility**

Hex: 2032-33h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 99

Data Type: UInt16

Default: 1

Change: At stop

**Value Range:**

0–99

**Description**

-

**H32.53****Motor standstill threshold for position lock angle auto-tuning**

Hex: 2032-36h

Effective mode: At stop

Min.: 0.1

Unit: s

Max.: 10.0

Data Type: UInt16

Default: 0.5

Change: At stop

**Value Range:**

0.1s to 10.0s

**Description**

Sets motor standstill threshold for auto-tuning. Usually no change is required.

**H32.54****Hall auto-tuning selection**

Hex: 2032-37h

Effective mode: Real time



|          |       |            |         |
|----------|-------|------------|---------|
| Min.:    | 0     | Unit:      | -       |
| Max.:    | 65535 | Data Type: | UInt16  |
| Default: | 0     | Change:    | At stop |

**Value Range:**

0–65535

**Description**

When this parameter is enabled, the Hall auto-tuning will be started automatically after basic angle auto-tuning is done.

**H32.55 Hall signal UVW manual adjustment**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-38h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 7        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–7

**Description**

-

**H32.56 UVW filter time of Hall signal**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-39h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 10       | Data Type:      | UInt16    |
| Default: | 5        | Change:         | Real-time |

**Value Range:**

0 ms to 10 ms

**Description**

-

**H32.57 Hall closed-loop locked-rotor speed**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2032-3Ah | Effective mode: | Real time    |
| Min.:    | 0        | Unit:           | [mm/s]/[rpm] |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 2        | Change:         | At stop      |

**Value Range:**

0[mm/s]/[rpm]–65535[mm/s]/[rpm]

**Description**

-

**H32.58 Hall closed-loop locked-rotor current**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-3Bh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 300.0    | Data Type:      | UInt16    |
| Default: | 120.0    | Change:         | At stop   |

**Value Range:**

0.0% to 300.0%

**Description**

-

**H32.59 Hall closed-loop locked-rotor window time**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-3Ch | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | ms        |
| Max.:    | 2000     | Data Type:      | UInt16    |
| Default: | 10       | Change:         | At stop   |

**Value Range:**

0 ms to 2000 ms

**Description**

-

**H32.60 Hall closed-loop inertia ratio**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-3Dh | Effective mode: | Real time |
| Min.:    | 0.00     | Unit:           | -         |
| Max.:    | 120.00   | Data Type:      | UInt16    |
| Default: | 0.00     | Change:         | At stop   |

**Value Range:**

0.00–120.00

**Description**

-

**H32.61 Hall closed-loop rigidity**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-3Eh | Effective mode: | Real time |
| Min.:    | 4        | Unit:           | -         |
| Max.:    | 31       | Data Type:      | UInt16    |
| Default: | 16       | Change:         | At stop   |

**Value Range:**

4–31

**Description**

-

**H32.62 Electrical angle save flag**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-3Fh | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

Automatic reset will be performed after the electrical angle is saved when dynamic Hall auto-tuning is done.

**H32.63 Hall1 electric angle**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-40h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H32.64 Hall2 electric angle**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-41h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H32.65 Hall3 electric angle**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2032-42h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |

Max.: 65535

Default: 0

**Value Range:**

0–65535

**Description**

-

Data Type: UInt16

Change: At stop

**H32.66****Hall4 electric angle**

Hex: 2032-43h

Min.: 0

Max.: 65535

Default: 0

**Value Range:**

0–65535

**Description**

-

Effective mode: Real time

Unit: -

Data Type: UInt16

Change: At stop

**H32.67****Hall5 electric angle**

Hex: 2032-44h

Min.: 0

Max.: 65535

Default: 0

**Value Range:**

0–65535

**Description**

-

Effective mode: Real time

Unit: -

Data Type: UInt16

Change: At stop

**H32.68****Hall6 electric angle**

Hex: 2032-45h

Min.: 0

Max.: 65535

Default: 0

**Value Range:**

0–65535

**Description**

-

Effective mode: Real time

Unit: -

Data Type: UInt16

Change: At stop

**H32.70 Motor overload protection mode**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2032-47h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 3        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

- 0: Internal motor overload curve
- 1: External motor overload curve
- 2: Current limit overload protection
- 3: Hide motor overload protection

**Description**

For details, see the guide.

**H32.73 Thermal threshold current of overload current limit**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2032-4Ah | Effective mode: | Upon the next power-on |
| Min.:    | 100.0    | Unit:           | %                      |
| Max.:    | 750.0    | Data Type:      | UInt16                 |
| Default: | 115.0    | Change:         | At stop                |

**Value Range:**

100.0% to 750.0%

**Description**

Thermal limit current is a percentage of motor rated current defaulted to 100%, above which the motor starts to heat continuously. The motor current will be finally maintained at this value.

**H32.74 Peak current of overload current limit**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2032-4Bh | Effective mode: | Upon the next power-on |
| Min.:    | 100.0    | Unit:           | %                      |
| Max.:    | 750.0    | Data Type:      | UInt16                 |
| Default: | 300.0    | Change:         | At stop                |

**Value Range:**

100.0% to 750.0%

**Description**

Defines the ratio of the peak current that can be reached by the motor to the rated current of the motor.

**H32.75 Max. current duration of overload protection**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2032-4Ch | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|          |        |            |         |
|----------|--------|------------|---------|
| Min.:    | 0.01   | Unit:      | s       |
| Max.:    | 655.35 | Data Type: | UInt16  |
| Default: | 1.00   | Change:    | At stop |

**Value Range:**

0.01s to 655.35s

**Description**

Calculate the maximum heat that can be reached by the motor based on the maximum current continuous time, and take this value as the motor overload alarm threshold.

**H32.76 Current limit time constant of overload protection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-4Dh | Effective mode: | Real time |
| Min.:    | 0.01     | Unit:           | -         |
| Max.:    | 655.35   | Data Type:      | UInt16    |
| Default: | 1.00     | Change:         | At stop   |

**Value Range:**

0.01–655.35

**Description**

It is related to the maximum current continuous time. The higher the setpoint, the longer the maximum current continuous time will be.

**H32.77 Current limit alarm threshold of overload protection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-4Eh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 750.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | At stop   |

**Value Range:**

0.0% to 750.0%

**Description**

If current limit protection is effective, and the limited current is lower than this value, the drive will raise an alarm.

**H32.78 Current limit fault threshold of overload protection**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2032-4Fh | Effective mode: | Real time |
| Min.:    | 0.0      | Unit:           | %         |
| Max.:    | 750.0    | Data Type:      | UInt16    |
| Default: | 0.0      | Change:         | At stop   |

**Value Range:**

0.0% to 750.0%

**Description**

If current limit protection is effective, and the limited current is lower than this value, the drive will report an error.

**H32.79 Thermal threshold current of overload**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2032-50h | Effective mode: | Upon the next power-on |
| Min.:    | 100.0    | Unit:           | %                      |
| Max.:    | 750.0    | Data Type:      | UInt16                 |
| Default: | 115.0    | Change:         | At stop                |

**Value Range:**

100.0% to 750.0%

**Description**

-

**H32.80 Thermal current interval of overload**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2032-51h | Effective mode: | Upon the next power-on |
| Min.:    | 0.1      | Unit:           | %                      |
| Max.:    | 204.8    | Data Type:      | UInt16                 |
| Default: | 6.4      | Change:         | At stop                |

**Value Range:**

0.1% to 204.8%

**Description**

-

**H32.81 Overload heat dissipation current interval**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2032-52h | Effective mode: | Upon the next power-on |
| Min.:    | 0.1      | Unit:           | %                      |
| Max.:    | 204.8    | Data Type:      | UInt16                 |
| Default: | 6.4      | Change:         | At stop                |

**Value Range:**

0.1% to 204.8%

**Description**

-

**H32.82 Length of overload heat dissipation curve**

|      |          |                 |                        |
|------|----------|-----------------|------------------------|
| Hex: | 2032-53h | Effective mode: | Upon the next power-on |
|------|----------|-----------------|------------------------|

|          |     |            |         |
|----------|-----|------------|---------|
| Min.:    | 1   | Unit:      | -       |
| Max.:    | 200 | Data Type: | UInt16  |
| Default: | 1   | Change:    | At stop |

**Value Range:**

1–200

**Description**

-

**H32.83 Length of overload heat dissipation curve**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2032-54h | Effective mode: | Upon the next power-on |
| Min.:    | 1        | Unit:           | -                      |
| Max.:    | 200      | Data Type:      | UInt16                 |
| Default: | 1        | Change:         | At stop                |

**Value Range:**

1–200

**Description**

-

**4.30 H33 Compensation Parameters****H33.00 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-01h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.01 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-02h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535



**Description**

-

**H33.02 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-03h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.03 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-04h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.04 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-05h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.05 Compensation data BUFFER**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2033-06h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 65535    | Data Type:      | UInt16    |

|                     |   |         |         |
|---------------------|---|---------|---------|
| Default:            | 0 | Change: | At stop |
| <b>Value Range:</b> |   |         |         |
| 0–65535             |   |         |         |
| <b>Description</b>  |   |         |         |
| -                   |   |         |         |

**H33.06 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-07h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.07 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-08h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.08 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-09h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.09 Compensation data BUFFER**

|      |          |                 |           |
|------|----------|-----------------|-----------|
| Hex: | 2033-0Ah | Effective mode: | Real time |
|------|----------|-----------------|-----------|

|                     |       |            |         |
|---------------------|-------|------------|---------|
| Min.:               | 0     | Unit:      | -       |
| Max.:               | 65535 | Data Type: | UInt16  |
| Default:            | 0     | Change:    | At stop |
| <b>Value Range:</b> |       |            |         |
| 0–65535             |       |            |         |
| <b>Description</b>  |       |            |         |
| -                   |       |            |         |

**H33.10 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-0Bh | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.11 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-0Ch | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.12 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-0Dh | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

|               |                                 |          |                        |
|---------------|---------------------------------|----------|------------------------|
| <b>H33.13</b> | <b>Compensation data BUFFER</b> |          |                        |
|               | Hex:                            | 2033-0Eh | Effective    Real time |
|               |                                 |          | mode:                  |
|               | Min.:                           | 0        | Unit:       -          |
|               | Max.:                           | 65535    | Data Type: UInt16      |
|               | Default:                        | 0        | Change:    At stop     |
|               | <b>Value Range:</b>             |          |                        |
|               | 0–65535                         |          |                        |
|               | <b>Description</b>              |          |                        |
|               | -                               |          |                        |
| <b>H33.14</b> | <b>Compensation data BUFFER</b> |          |                        |
|               | Hex:                            | 2033-0Fh | Effective    Real time |
|               |                                 |          | mode:                  |
|               | Min.:                           | 0        | Unit:       -          |
|               | Max.:                           | 65535    | Data Type: UInt16      |
|               | Default:                        | 0        | Change:    At stop     |
|               | <b>Value Range:</b>             |          |                        |
|               | 0–65535                         |          |                        |
|               | <b>Description</b>              |          |                        |
|               | -                               |          |                        |
| <b>H33.15</b> | <b>Compensation data BUFFER</b> |          |                        |
|               | Hex:                            | 2033-10h | Effective    Real time |
|               |                                 |          | mode:                  |
|               | Min.:                           | 0        | Unit:       -          |
|               | Max.:                           | 65535    | Data Type: UInt16      |
|               | Default:                        | 0        | Change:    At stop     |
|               | <b>Value Range:</b>             |          |                        |
|               | 0–65535                         |          |                        |
|               | <b>Description</b>              |          |                        |
|               | -                               |          |                        |
| <b>H33.16</b> | <b>Compensation data BUFFER</b> |          |                        |
|               | Hex:                            | 2033-11h | Effective    Real time |
|               |                                 |          | mode:                  |
|               | Min.:                           | 0        | Unit:       -          |
|               | Max.:                           | 65535    | Data Type: UInt16      |
|               | Default:                        | 0        | Change:    At stop     |
|               | <b>Value Range:</b>             |          |                        |
|               | 0–65535                         |          |                        |
|               | <b>Description</b>              |          |                        |
|               | -                               |          |                        |

**Description**

-

**H33.17 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-12h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.18 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-13h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.19 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-14h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.20 Compensation data BUFFER**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2033-15h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 65535    | Data Type:      | UInt16    |

Default: 0

Change: At stop

**Value Range:**

0–65535

**Description**

-

**H33.21 Compensation data BUFFER**

Hex: 2033-16h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0–65535

**Description**

-

**H33.22 Compensation data BUFFER**

Hex: 2033-17h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0–65535

**Description**

-

**H33.23 Compensation data BUFFER**

Hex: 2033-18h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0–65535

**Description**

-

**H33.24 Compensation data BUFFER**

Hex: 2033-19h

Effective mode: Real time

|                     |       |            |         |
|---------------------|-------|------------|---------|
| Min.:               | 0     | Unit:      | -       |
| Max.:               | 65535 | Data Type: | UInt16  |
| Default:            | 0     | Change:    | At stop |
| <b>Value Range:</b> |       |            |         |
| 0–65535             |       |            |         |
| <b>Description</b>  |       |            |         |
| -                   |       |            |         |

**H33.25 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-1Ah | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.26 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-1Bh | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.27 Compensation data BUFFER**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-1Ch | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

|                     |                                 |                 |           |
|---------------------|---------------------------------|-----------------|-----------|
| <b>H33.28</b>       | <b>Compensation data BUFFER</b> |                 |           |
| Hex:                | 2033-1Dh                        | Effective mode: | Real time |
| Min.:               | 0                               | Unit:           | -         |
| Max.:               | 65535                           | Data Type:      | UInt16    |
| Default:            | 0                               | Change:         | At stop   |
| <b>Value Range:</b> | 0–65535                         |                 |           |
| <b>Description</b>  | -                               |                 |           |
| <b>H33.29</b>       | <b>Compensation data BUFFER</b> |                 |           |
| Hex:                | 2033-1Eh                        | Effective mode: | Real time |
| Min.:               | 0                               | Unit:           | -         |
| Max.:               | 65535                           | Data Type:      | UInt16    |
| Default:            | 0                               | Change:         | At stop   |
| <b>Value Range:</b> | 0–65535                         |                 |           |
| <b>Description</b>  | -                               |                 |           |
| <b>H33.30</b>       | <b>Compensation data BUFFER</b> |                 |           |
| Hex:                | 2033-1Fh                        | Effective mode: | Real time |
| Min.:               | 0                               | Unit:           | -         |
| Max.:               | 65535                           | Data Type:      | UInt16    |
| Default:            | 0                               | Change:         | At stop   |
| <b>Value Range:</b> | 0–65535                         |                 |           |
| <b>Description</b>  | -                               |                 |           |
| <b>H33.31</b>       | <b>Compensation data BUFFER</b> |                 |           |
| Hex:                | 2033-20h                        | Effective mode: | Real time |
| Min.:               | 0                               | Unit:           | -         |
| Max.:               | 65535                           | Data Type:      | UInt16    |
| Default:            | 0                               | Change:         | At stop   |
| <b>Value Range:</b> | 0–65535                         |                 |           |



**Description**

-

**H33.32 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-21h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.33 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-22h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.34 Compensation data BUFFER**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-23h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–65535

**Description**

-

**H33.35 Compensation data BUFFER**

|       |          |                 |           |
|-------|----------|-----------------|-----------|
| Hex:  | 2033-24h | Effective mode: | Real time |
| Min.: | 0        | Unit:           | -         |
| Max.: | 65535    | Data Type:      | UInt16    |

Default: 0

Change: At stop

**Value Range:**

0–65535

**Description**

-

**H33.36 Compensation data BUFFER**

Hex: 2033-25h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0–65535

**Description**

-

**H33.37 Compensation data BUFFER**

Hex: 2033-26h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0–65535

**Description**

-

**H33.38 Compensation data BUFFER**

Hex: 2033-27h

Effective mode: Real time

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0–65535

**Description**

-

**H33.39 Compensation data BUFFER**

Hex: 2033-28h

Effective mode: Real time

|                     |       |            |         |
|---------------------|-------|------------|---------|
| Min.:               | 0     | Unit:      | -       |
| Max.:               | 65535 | Data Type: | UInt16  |
| Default:            | 0     | Change:    | At stop |
| <b>Value Range:</b> |       |            |         |
| 0–65535             |       |            |         |
| <b>Description</b>  |       |            |         |
| -                   |       |            |         |

**H33.40      Current Compensation BUFFER group number**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-29h | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 65535    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–65535             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.41      Compensation data sum**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-2Ah | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 32767    | Data Type:      | UInt16    |
| Default:            | 0        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–32767             |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.44      Data command**

|                     |          |                 |           |
|---------------------|----------|-----------------|-----------|
| Hex:                | 2033-2Dh | Effective mode: | Real time |
| Min.:               | 0        | Unit:           | -         |
| Max.:               | 1        | Data Type:      | UInt16    |
| Default:            | 1        | Change:         | At stop   |
| <b>Value Range:</b> |          |                 |           |
| 0–1                 |          |                 |           |
| <b>Description</b>  |          |                 |           |
| -                   |          |                 |           |

**H33.45 Data storage position**

Hex: 2033-2Eh

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 2

Data Type: UInt16

Default: 1

Change: At stop

**Value Range:**

0: Servo RAM

1: Servo FLASH

2: Encoder FLASH

**Description**

-

**H33.46 Data clear**

Hex: 2033-2Fh

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 3

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0–3

**Description**

-

**H33.47 Software tool write status**

Hex: 2033-30h

Effective Real time

mode:

Min.: 0

Unit: -

Max.: 2

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0–2

**Description**

-

**H33.48 Servo read status**

Hex: 2033-31h

Effective -

mode:

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: Unchangeable

**Value Range:**

0–65535

**Description**

-

**H33.49      Software tool read status**

Hex:            2033-32h

Effective      Real time  
mode:

Min.:           0

Unit:           -

Max.:           2

Data Type:   UInt16

Default:       0

Change:       At stop

**Value Range:**

0–2

**Description**

-

**H33.50      Servo write status**

Hex:            2033-33h

Effective      -  
mode:

Min.:           0

Unit:           -

Max.:           2

Data Type:   UInt16

Default:       0

Change:       Unchangeable

**Value Range:**

0–2

**Description**

-

**H33.51      Data transmission completed flag**

Hex:            2033-34h

Effective      Real time  
mode:

Min.:           0

Unit:           -

Max.:           1

Data Type:   UInt16

Default:       0

Change:       At stop

**Value Range:**

0–1

**Description**

-

**H33.52      Servo data transfer completed flag**

Hex:            2033-35h

Effective      -  
mode:

Min.:           0

Unit:           -

Max.:           1

Data Type:   UInt16

Default: 0

Change: Unchangeable

**Value Range:**

0–1

**Description**

-

**H33.60 Accuracy compensation function**

Hex: 2033-3Dh

Effective mode: Upon the next power-on

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0–1

**Description**

Used to enable accuracy compensation.

**H33.61 Accuracy compensation sum**

Hex: 2033-3Eh

Effective mode: Upon the next power-on

Min.: 0

Unit: count

Max.: 65535

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0count to 65535count

**Description**

Total accuracy compensation points.

**H33.62 Starting offset address of accuracy compensation**

Hex: 2033-3Fh

Effective mode: Upon the next power-on

Min.: -21474836.48

Unit: [mm]/[deg]

Max.: 21474836.47

Data Type: Int32

Default: 0.00

Change: At stop

**Value Range:**

-21474836.48[mm]/[deg]–21474836.47[mm]/[deg]

**Description**

The direct-drive motor compensation home of incremental encoder is the home of the mechanical system coordinate.

**H33.64 Accuracy compensation data interval**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2033-41h | Effective mode: | Upon the next power-on |
| Min.:    | -327.67  | Unit:           | [mm]/[deg]             |
| Max.:    | 327.67   | Data Type:      | Int16                  |
| Default: | 0.00     | Change:         | At stop                |

**Value Range:**

-327.67[mm]/[deg]–327.67[mm]/[deg]

**Description**

Interval of adjacent compensation points of accuracy compensation.

**H33.65 Accuracy compensation dial phase sequence**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2033-42h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 65535    | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0–65535

**Description**

Phase sequence record of accuracy compensation dial stage.

**H33.66 Accuracy compensation dial reference direction**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2033-43h | Effective mode: | Upon the next power-on |
| Min.:    | 0        | Unit:           | -                      |
| Max.:    | 1        | Data Type:      | UInt16                 |
| Default: | 0        | Change:         | At stop                |

**Value Range:**

0–1

**Description**

Reference direction record of accuracy compensation dial stage.

**H33.67 Servo homing completed**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2033-44h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Accuracy compensation homing completion signal.

**H33.68 Current acting index of accuracy compensation**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2033-45h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

Current compensation position of accuracy compensation.

**H33.69 Forced homing start**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-46h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | -         |
| Max.:    | 1        | Data Type:      | UInt16    |
| Default: | 0        | Change:         | At stop   |

**Value Range:**

0–1

**Description**

Enables accuracy compensation forced homing.

**H33.70 Forced homing mode**

|          |          |                 |                        |
|----------|----------|-----------------|------------------------|
| Hex:     | 2033-47h | Effective mode: | Upon the next power-on |
| Min.:    | -32768   | Unit:           | -                      |
| Max.:    | 32767    | Data Type:      | Int16                  |
| Default: | -2       | Change:         | At stop                |

**Value Range:**

-32768–32767

**Description**

Homing mode record of accuracy compensation dial stage.

**H33.71 Forced homing at low speed**

|       |          |                 |                        |
|-------|----------|-----------------|------------------------|
| Hex:  | 2033-48h | Effective mode: | Upon the next power-on |
| Min.: | 0        | Unit:           | [mm/s]/[rpm]           |
| Max.: | 1000     | Data Type:      | UInt16                 |



Default: 10

Change: At stop

**Value Range:**

0[mm/s]/[rpm]–1000[mm/s]/[rpm]

**Description**

Homing speed record of accuracy compensation dial stage.

**H33.72 Single-turn absolute position of accuracy compensation home of absolute encoder**

Hex: 2033-49h

Effective mode: Upon the next power-on

Min.: 0

Unit: p

Max.: 4294967295

Data Type: UInt32

Default: 0

Change: At stop

**Value Range:**

0p to 4294967295p

**Description**

Single-turn absolute value of direct-drive motor compensation home of absolute encoder.

**H33.74 Min.pulse width of frequency-division output accuracy compensation**

Hex: 2033-4Bh

Effective mode: Upon the next power-on

Min.: 2

Unit: count

Max.: 7

Data Type: UInt16

Default: 3

Change: At stop

**Value Range:**

2count to 7count

**Description**

Defines the minimum pulse width of accuracy compensation frequency-division output.

**H33.75 Accuracy compensation data unit**

Hex: 2033-4Ch

Effective mode: Real time

Min.: 0

Unit: -

Max.: 1

Data Type: UInt16

Default: 0

Change: At stop

**Value Range:**

0: [um]/[arcsec]

1: [mm]/[mrad]

**Description**

Defines the accuracy compensation data unit.  
 For DDL: 0-um; 1-mm;  
 For DDR: 0-arcsec; 2-mrad

**H33.81 Motor cogging torque ripple compensation sum**

|          |          |                 |           |
|----------|----------|-----------------|-----------|
| Hex:     | 2033-52h | Effective mode: | Real time |
| Min.:    | 0        | Unit:           | count     |
| Max.:    | 65535    | Data Type:      | UInt16    |
| Default: | 2000     | Change:         | At stop   |

**Value Range:**

0count to 65535count

**Description**

Motor cogging torque ripple compensation sum

### 4.31 H34 Servo Motor Parameters 2

**H34.12 Error type supported by Endat2.2 encoder**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 2034-0Dh | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 65535    | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

bit0: Light source  
 bit1: Signal amplitude  
 bit2: Position  
 bit3: Overvoltage  
 bit4: Undervoltage  
 bit5: Overcurrent  
 bit6: Battery  
 bit0: Light source  
 bit1: Signal amplitude  
 bit2: Position  
 bit3: Overvoltage  
 bit4: Undervoltage  
 bit5: Overcurrent  
 bit6: Battery

**H34.13 Alarm types supported by EnDat2.2 encoders**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2034-0Eh | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

- bit0: Frequency collision
- bit1: Temperature exceeded
- bit2: Light source control reserve
- bit3: Battery charge
- bit4: Reference points
- bit5: Cyclic mode
- bit6: Limit position
- bit7: Readiness
- bit8: Diagnostics

**H34.14 Error value supported by Endat2.2 encoder**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2034-0Fh | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

- bit0: Light source
- bit1: Signal amplitude
- bit2: Position
- bit3: Overvoltage
- bit4: Undervoltage
- bit5: Overcurrent
- bit6: Battery
- bit0: Light source
- bit1: Signal amplitude
- bit2: Position
- bit3: Overvoltage
- bit4: Undervoltage
- bit5: Overcurrent
- bit6: Battery

**H34.15 Alarm values supported by EnDat2.2 encoder**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 2034-10h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 65535    | Data Type: | UInt16       |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

bit0: Frequency collision  
 bit1: Temperature exceeded  
 bit2: Light source control reserve  
 bit3: Battery charge  
 bit4: Reference points  
 bit5: Cyclic mode  
 bit6: Limit position  
 bit7: Readiness  
 bit8: Diagnostics

**4.32 1000h Object Dictionary****1000.00h Device type**

|          |            |            |              |
|----------|------------|------------|--------------|
| Hex:     | 1000-00h   | Effective  | -            |
|          |            | mode:      |              |
| Min.:    | 0          | Unit:      | -            |
| Max.:    | 0xFFFFFFFF | Data Type: | UInt32       |
| Default: | 0          | Change:    | Unchangeable |

**Value Range:**

0s to 0xFFFFFFFF

**Description**

-

**1001.00h Error Register**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 1001-00h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 0xFF     | Data Type: | UInt8        |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0s to 0xFF

|                 |                      |            |              |
|-----------------|----------------------|------------|--------------|
|                 | <b>Description</b>   |            |              |
|                 | -                    |            |              |
| <b>1018.01h</b> | <b>Vendor ID</b>     |            |              |
| Hex:            | 1018-01h             | Effective  | -            |
|                 |                      | mode:      |              |
| Min.:           | 0                    | Unit:      | -            |
| Max.:           | 0xFFFFFFFF           | Data Type: | UInt32       |
| Default:        | 0                    | Change:    | Unchangeable |
|                 | <b>Value Range:</b>  |            |              |
|                 | 0s to 0xFFFFFFFF     |            |              |
|                 | <b>Description</b>   |            |              |
|                 | -                    |            |              |
| <b>1018.02h</b> | <b>Product Code</b>  |            |              |
| Hex:            | 1018-02h             | Effective  | -            |
|                 |                      | mode:      |              |
| Min.:           | 0                    | Unit:      | -            |
| Max.:           | 0xFFFFFFFF           | Data Type: | UInt32       |
| Default:        | 0                    | Change:    | Unchangeable |
|                 | <b>Value Range:</b>  |            |              |
|                 | 0s to 0xFFFFFFFF     |            |              |
|                 | <b>Description</b>   |            |              |
|                 | -                    |            |              |
| <b>1018.03h</b> | <b>Revision</b>      |            |              |
| Hex:            | 1018-03h             | Effective  | -            |
|                 |                      | mode:      |              |
| Min.:           | 0                    | Unit:      | -            |
| Max.:           | 0xFFFFFFFF           | Data Type: | UInt32       |
| Default:        | 0                    | Change:    | Unchangeable |
|                 | <b>Value Range:</b>  |            |              |
|                 | 0s to 0xFFFFFFFF     |            |              |
|                 | <b>Description</b>   |            |              |
|                 | -                    |            |              |
| <b>1018.04h</b> | <b>Serial number</b> |            |              |
| Hex:            | 1018-04h             | Effective  | -            |
|                 |                      | mode:      |              |
| Min.:           | 0                    | Unit:      | -            |
| Max.:           | 0xFFFFFFFF           | Data Type: | UInt32       |
| Default:        | 0                    | Change:    | Unchangeable |

**Value Range:**

0s to 0xFFFFFFFF

**Description**

-

**1600.00h Number of valid mapped objects in RPDO1**

|          |          |            |              |
|----------|----------|------------|--------------|
| Hex:     | 1600-00h | Effective  | -            |
|          |          | mode:      |              |
| Min.:    | 0        | Unit:      | -            |
| Max.:    | 20       | Data Type: | UInt8        |
| Default: | 0        | Change:    | Unchangeable |

**Value Range:**

0–20

**Description**

This object can be modified only when PDO is inactive. When 0 is written, the mapping objects of other sub-indexes are cleared.

**1600.01h Mapped object 1 in RPDO1**

|          |            |            |              |
|----------|------------|------------|--------------|
| Hex:     | 1600-01h   | Effective  | -            |
|          |            | mode:      |              |
| Min.:    | 0          | Unit:      | -            |
| Max.:    | 0xFFFFFFFF | Data Type: | UInt32       |
| Default: | 0          | Change:    | Unchangeable |

**Value Range:**

0s to 0xFFFFFFFF

**Description**

The total length of a mapping object cannot exceed 64 bits. Mapping based on bytes instead of bits is supported. The indexes and sub-indexes of mapping objects must exist in the object dictionary list. The attribute of mapping objects is readable and the objects can be mapped.

Sub-indexes are written in the following format:

bit31 to bit16: index

bit15–bit8:

Object Length

bit7–bit0:

Sub-index

**1600.02h Mapped object 2 in RPDO1**

|       |            |            |        |
|-------|------------|------------|--------|
| Hex:  | 1600-02h   | Effective  | -      |
|       |            | mode:      |        |
| Min.: | 0          | Unit:      | -      |
| Max.: | 0xFFFFFFFF | Data Type: | UInt32 |

Change: Unchangeable

**1600.03h Mapped object 3 in RPDO1**

Effective -

mode:

Unit: -

Data Type: UInt32

Change: Unchangeable

**1600.04h** Mapped object 4 in RPDO1

Effective -

mode:

Unit: -

Data Type: UInt32

Change: Unchangeable

**1600.05h Mapped object 5 in RPDO1**

Effective -

Effective -

mode:

Unit: -

Data Type: UInt32

Change: Unchangeable

**1600.06h Mapped object 6 in RPD01**

Effective -

Effective -

mode:

Min.: 0  
 Max.: 0xFFFFFFFF  
 Default: 0

Unit: -  
 Data Type: UInt32  
 Change: Unchangeable

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1600.01h.

**1600.07h Mapped object 7 in RPDO1**

Hex: 1600-07h

Effective -

mode:

Min.: 0  
 Max.: 0xFFFFFFFF  
 Default: 0

Unit: -  
 Data Type: UInt32  
 Change: Unchangeable

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1600.01h.

**1600.08h Mapped object 8 in RPDO1**

Hex: 1600-08h

Effective -

mode:

Min.: 0  
 Max.: 0xFFFFFFFF  
 Default: 0

Unit: -  
 Data Type: UInt32  
 Change: Unchangeable

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1600.01h.

**1600.09h Mapped object 9 in RPDO1**

Hex: 1600-09h

Effective -

mode:

Min.: 0  
 Max.: 0xFFFFFFFF  
 Default: 0

Unit: -  
 Data Type: UInt32  
 Change: Unchangeable

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1600.01h.



**1600.0Ah Mapped object 10 in RPDO1**

Hex: 1600-0Ah

Effective -

mode:

Min.: 0

Unit: -

Max.: 0xFFFFFFFF

Data Type: UInt32

Default: 0

Change: Unchangeable

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1600.01h.

**1600.0Bh Mapped object 11 in RPDO1**

Hex: 1600-0Bh

Effective -

mode:

Min.: 0

Unit: -

Max.: 0xFFFFFFFF

Data Type: UInt32

Default: 0

Change: Unchangeable

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1600.01h.

**1600.0Ch Mapped object 12 in RPDO1**

Hex: 1600-0Ch

Effective -

mode:

Min.: 0

Unit: -

Max.: 0xFFFFFFFF

Data Type: UInt32

Default: 0

Change: Unchangeable

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1600.01h.

**1600.0Dh Mapped object 13 in RPDO1**

Hex: 1600-0Dh

Effective -

mode:

Min.: 0

Unit: -

Max.: 0xFFFFFFFF

Data Type: UInt32

Default: 0

Change: Unchangeable

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1600.01h.

**1600.0Eh Mapped object 14 in RPDO1**

Hex: 1600-0Eh

Effective -

mode:

Min.: 0

Unit: -

Max.: 0xFFFFFFFF

Data Type: UInt32

Default: 0

Change: Unchangeable

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1600.01h.

**1600.0Fh Mapped object 15 in RPDO1**

Hex: 1600-0Fh

Effective -

mode:

Min.: 0

Unit: -

Max.: 0xFFFFFFFF

Data Type: UInt32

Default: 0

Change: Unchangeable

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1600.01h.

**1600.10h Mapped object 16 in RPDO1**

Hex: 1600-10h

Effective -

mode:

Min.: 0

Unit: -

Max.: 0xFFFFFFFF

Data Type: UInt32

Default: 0

Change: Unchangeable

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1600.01h.

**1600.11h Mapped object 17 in RPDO1**

Hex: 1600-11h

Effective -

mode:

Min.: 0

Unit: -

Max.: 0xFFFFFFFF

Data Type: UInt32

|                     |            |                 |              |
|---------------------|------------|-----------------|--------------|
| Hex:                | 1600-12h   | Effective mode: | -            |
| Min.:               | 0          | Unit:           | -            |
| Max.:               | 0xFFFFFFFF | Data Type:      | UInt32       |
| Default:            | 0          | Change:         | Unchangeable |
| <b>Value Range:</b> |            |                 |              |
| 0s to 0xFFFFFFFF    |            |                 |              |
| <b>Description</b>  |            |                 |              |
| Same as 1600.01h.   |            |                 |              |

|                     |            |                 |              |
|---------------------|------------|-----------------|--------------|
| Hex:                | 1600-13h   | Effective mode: | -            |
| Min.:               | 0          | Unit:           | -            |
| Max.:               | 0xFFFFFFFF | Data Type:      | UInt32       |
| Default:            | 0          | Change:         | Unchangeable |
| <b>Value Range:</b> |            |                 |              |
| 0s to 0xFFFFFFFF    |            |                 |              |
| <b>Description</b>  |            |                 |              |
| Same as 1600.01h.   |            |                 |              |

|                     |            |                 |              |
|---------------------|------------|-----------------|--------------|
| Hex:                | 1600-14h   | Effective mode: | -            |
| Min.:               | 0          | Unit:           | -            |
| Max.:               | 0xFFFFFFFF | Data Type:      | UInt32       |
| Default:            | 0          | Change:         | Unchangeable |
| <b>Value Range:</b> |            |                 |              |
| 0s to 0xFFFFFFFF    |            |                 |              |
| <b>Description</b>  |            |                 |              |
| Same as 1600.01h.   |            |                 |              |

Hex: 1A00-00h Effective mode:

|          |    |            |              |
|----------|----|------------|--------------|
| Min.:    | 0  | Unit:      | -            |
| Max.:    | 20 | Data Type: | UInt8        |
| Default: | 0  | Change:    | Unchangeable |

**Value Range:**

0–20

**Description**

This object can be modified only when PDO is inactive. When 0 is written, the mapping objects of other sub-indexes are cleared.

**1A00.01h Mapped object 1 in TPDO1**

|          |            |                 |              |
|----------|------------|-----------------|--------------|
| Hex:     | 1A00-01h   | Effective mode: | -            |
| Min.:    | 0          | Unit:           | -            |
| Max.:    | 0xFFFFFFFF | Data Type:      | UInt32       |
| Default: | 0          | Change:         | Unchangeable |

**Value Range:**

0s to 0xFFFFFFFF

**Description**

The total length of a mapping object cannot exceed 64 bits. Mapping based on bytes instead of bits is supported. The indexes and sub-indexes of mapping objects must exist in the object dictionary list. The attribute of mapping objects is readable and the objects can be mapped.

Sub-indexes are written in the following format:

bit31 to bit16: index

bit15–bit8:

Object Length

bit7–bit0:

Sub-index

**1A00.02h Mapped object 2 in TPDO1**

|          |            |                 |              |
|----------|------------|-----------------|--------------|
| Hex:     | 1A00-02h   | Effective mode: | -            |
| Min.:    | 0          | Unit:           | -            |
| Max.:    | 0xFFFFFFFF | Data Type:      | UInt32       |
| Default: | 0          | Change:         | Unchangeable |

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1A00.01h.

**1A00.03h Mapped object 3 in TPDO1**

|                     |            |            |              |
|---------------------|------------|------------|--------------|
| Hex:                | 1A00-03h   | Effective  | -            |
|                     |            | mode:      |              |
| Min.:               | 0          | Unit:      | -            |
| Max.:               | 0xFFFFFFFF | Data Type: | UInt32       |
| Default:            | 0          | Change:    | Unchangeable |
| <b>Value Range:</b> |            |            |              |
| 0s to 0xFFFFFFFF    |            |            |              |
| <b>Description</b>  |            |            |              |
| Same as 1A00.01h.   |            |            |              |

**1A00.04h Mapped object 4 in TPDO1**

|                     |            |            |              |
|---------------------|------------|------------|--------------|
| Hex:                | 1A00-04h   | Effective  | -            |
|                     |            | mode:      |              |
| Min.:               | 0          | Unit:      | -            |
| Max.:               | 0xFFFFFFFF | Data Type: | UInt32       |
| Default:            | 0          | Change:    | Unchangeable |
| <b>Value Range:</b> |            |            |              |
| 0s to 0xFFFFFFFF    |            |            |              |
| <b>Description</b>  |            |            |              |
| Same as 1A00.01h.   |            |            |              |

**1A00.05h Mapped object 5 in TPDO1**

|                     |            |            |              |
|---------------------|------------|------------|--------------|
| Hex:                | 1A00-05h   | Effective  | -            |
|                     |            | mode:      |              |
| Min.:               | 0          | Unit:      | -            |
| Max.:               | 0xFFFFFFFF | Data Type: | UInt32       |
| Default:            | 0          | Change:    | Unchangeable |
| <b>Value Range:</b> |            |            |              |
| 0s to 0xFFFFFFFF    |            |            |              |
| <b>Description</b>  |            |            |              |
| Same as 1A00.01h.   |            |            |              |

**1A00.06h Mapped object 6 in TPDO1**

|                     |            |            |              |
|---------------------|------------|------------|--------------|
| Hex:                | 1A00-06h   | Effective  | -            |
|                     |            | mode:      |              |
| Min.:               | 0          | Unit:      | -            |
| Max.:               | 0xFFFFFFFF | Data Type: | UInt32       |
| Default:            | 0          | Change:    | Unchangeable |
| <b>Value Range:</b> |            |            |              |
| 0s to 0xFFFFFFFF    |            |            |              |

**Description**

Same as 1A00.01h.

**1A00.07h Mapped object 7 in TPDO1**

Hex: 1A00-07h

Effective -

mode:

Min.: 0

Unit: -

Max.: 0xFFFFFFFF

Data Type: UInt32

Default: 0

Change: Unchangeable

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1A00.01h.

**1A00.08h Mapped object 8 in TPDO1**

Hex: 1A00-08h

Effective -

mode:

Min.: 0

Unit: -

Max.: 0xFFFFFFFF

Data Type: UInt32

Default: 0

Change: Unchangeable

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1A00.01h.

**1A00.09h Mapped object 9 in TPDO1**

Hex: 1A00-09h

Effective -

mode:

Min.: 0

Unit: -

Max.: 0xFFFFFFFF

Data Type: UInt32

Default: 0

Change: Unchangeable

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1A00.01h.

**1A00.0Ah Mapped object 10 in TPDO1**

Hex: 1A00-0Ah

Effective -

mode:

Min.: 0

Unit: -

Max.: 0xFFFFFFFF

Data Type: UInt32

|                 |                                         |                      |
|-----------------|-----------------------------------------|----------------------|
|                 | Default: 0                              | Change: Unchangeable |
|                 | <b>Value Range:</b><br>0s to 0xFFFFFFFF |                      |
|                 | <b>Description</b><br>Same as 1A00.01h. |                      |
| <b>1A00.0Bh</b> | <b>Mapped object 11 in TPD01</b>        |                      |
| Hex:            | 1A00-0Bh                                | Effective mode: -    |
| Min.:           | 0                                       | Unit: -              |
| Max.:           | 0xFFFFFFFF                              | Data Type: UInt32    |
| Default:        | 0                                       | Change: Unchangeable |
|                 | <b>Value Range:</b><br>0s to 0xFFFFFFFF |                      |
|                 | <b>Description</b><br>Same as 1A00.01h. |                      |
| <b>1A00.0Ch</b> | <b>Mapped object 12 in TPD01</b>        |                      |
| Hex:            | 1A00-0Ch                                | Effective mode: -    |
| Min.:           | 0                                       | Unit: -              |
| Max.:           | 0xFFFFFFFF                              | Data Type: UInt32    |
| Default:        | 0                                       | Change: Unchangeable |
|                 | <b>Value Range:</b><br>0s to 0xFFFFFFFF |                      |
|                 | <b>Description</b><br>Same as 1A00.01h. |                      |
| <b>1A00.0Dh</b> | <b>Mapped object 13 in TPD01</b>        |                      |
| Hex:            | 1A00-0Dh                                | Effective mode: -    |
| Min.:           | 0                                       | Unit: -              |
| Max.:           | 0xFFFFFFFF                              | Data Type: UInt32    |
| Default:        | 0                                       | Change: Unchangeable |
|                 | <b>Value Range:</b><br>0s to 0xFFFFFFFF |                      |
|                 | <b>Description</b><br>Same as 1A00.01h. |                      |
| <b>1A00.0Eh</b> | <b>Mapped object 14 in TPD01</b>        |                      |
| Hex:            | 1A00-0Eh                                | Effective mode: -    |

Min.: 0  
 Max.: 0xFFFFFFFF  
 Default: 0

Unit: -  
 Data Type: UInt32  
 Change: Unchangeable

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1A00.01h.

**1A00.0Fh Mapped object 15 in TPD01**

Hex: 1A00-0Fh

Effective -  
 mode:

Min.: 0  
 Max.: 0xFFFFFFFF  
 Default: 0

Unit: -  
 Data Type: UInt32  
 Change: Unchangeable

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1A00.01h.

**1A00.10h Mapped object 16 in TPD01**

Hex: 1A00-10h

Effective -  
 mode:

Min.: 0  
 Max.: 0xFFFFFFFF  
 Default: 0

Unit: -  
 Data Type: UInt32  
 Change: Unchangeable

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1A00.01h.

**1A00.11h Mapped object 17 in TPD01**

Hex: 1A00-11h

Effective -  
 mode:

Min.: 0  
 Max.: 0xFFFFFFFF  
 Default: 0

Unit: -  
 Data Type: UInt32  
 Change: Unchangeable

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Same as 1A00.01h.



**1A00.12h Mapped object 18 in TPDO1**

|                     |            |            |              |
|---------------------|------------|------------|--------------|
| Hex:                | 1A00-12h   | Effective  | -            |
|                     |            | mode:      |              |
| Min.:               | 0          | Unit:      | -            |
| Max.:               | 0xFFFFFFFF | Data Type: | UInt32       |
| Default:            | 0          | Change:    | Unchangeable |
| <b>Value Range:</b> |            |            |              |
| 0s to 0xFFFFFFFF    |            |            |              |
| <b>Description</b>  |            |            |              |
| Same as 1A00.01h.   |            |            |              |

**1A00.13h Mapped object 19 in TPDO1**

|                     |            |            |              |
|---------------------|------------|------------|--------------|
| Hex:                | 1A00-13h   | Effective  | -            |
|                     |            | mode:      |              |
| Min.:               | 0          | Unit:      | -            |
| Max.:               | 0xFFFFFFFF | Data Type: | UInt32       |
| Default:            | 0          | Change:    | Unchangeable |
| <b>Value Range:</b> |            |            |              |
| 0s to 0xFFFFFFFF    |            |            |              |
| <b>Description</b>  |            |            |              |
| Same as 1A00.01h.   |            |            |              |

**1A00.14h Mapped object 20 in TPDO1**

|                     |            |            |              |
|---------------------|------------|------------|--------------|
| Hex:                | 1A00-14h   | Effective  | -            |
|                     |            | mode:      |              |
| Min.:               | 0          | Unit:      | -            |
| Max.:               | 0xFFFFFFFF | Data Type: | UInt32       |
| Default:            | 0          | Change:    | Unchangeable |
| <b>Value Range:</b> |            |            |              |
| 0s to 0xFFFFFFFF    |            |            |              |
| <b>Description</b>  |            |            |              |
| Same as 1A00.01h.   |            |            |              |

**1C12.00h Number of assigned PDOs**

|                     |          |            |              |
|---------------------|----------|------------|--------------|
| Hex:                | 1C12-00h | Effective  | -            |
|                     |          | mode:      |              |
| Min.:               | 0        | Unit:      | -            |
| Max.:               | 2        | Data Type: | UInt8        |
| Default:            | 2        | Change:    | Unchangeable |
| <b>Value Range:</b> |          |            |              |
| 0–2                 |          |            |              |

**Description**

Number of PDOs assigned.

**1C12.01h PDO mapping object index of assigned RxPDO1**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 1C12-01h | Effective mode: | -            |
| Min.:    | 0x1600   | Unit:           | -            |
| Max.:    | 0x17FF   | Data Type:      | UInt16       |
| Default: | 0x1701   | Change:         | Unchangeable |

**Value Range:**

0x1600 to 0x17FF

**Description**

The PDO mapping object of assigned RxPDO1.

**1C12.02h PDO mapping object index of assigned RxPDO2**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 1C12-02h | Effective mode: | -            |
| Min.:    | 0x1600   | Unit:           | -            |
| Max.:    | 0x17FF   | Data Type:      | UInt16       |
| Default: | 0x170A   | Change:         | Unchangeable |

**Value Range:**

0x1600 to 0x17FF

**Description**

The PDO mapping object of assigned RxPDO2.

**1C13.00h Number of assigned PDOs**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 1C13-00h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 2        | Data Type:      | UInt8        |
| Default: | 2        | Change:         | Unchangeable |

**Value Range:**

0–2

**Description**

Number of PDOs assigned.

**1C13.01h PDO mapping object index of assigned TxPDO1**

|       |          |                 |        |
|-------|----------|-----------------|--------|
| Hex:  | 1C13-01h | Effective mode: | -      |
| Min.: | 0x1A00   | Unit:           | -      |
| Max.: | 0x1BFF   | Data Type:      | UInt16 |

Default: 0x1B01                      Change: Unchangeable

**Value Range:**

0x1A00 to 0x1BFF

**Description**

The PDO mapping object of assigned TxPDO1.

**1C13.02h    PDO mapping object index of assigned TxPDO2**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 1C13-02h | Effective mode: | -            |
| Min.:    | 0x1A00   | Unit:           | -            |
| Max.:    | 0x1BFF   | Data Type:      | UInt16       |
| Default: | 0x1B0A   | Change:         | Unchangeable |

**Value Range:**

0x1A00 to 0x1BFF

**Description**

The PDO mapping object of assigned TxPDO2.

**1C32.01h    Sync mode**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 1C32-01h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 0xFFFF   | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0s to 0xFFFF

**Description**

Synchronization mode.

**1C32.02h    Cycle time**

|          |            |                 |              |
|----------|------------|-----------------|--------------|
| Hex:     | 1C32-02h   | Effective mode: | -            |
| Min.:    | 0          | Unit:           | -            |
| Max.:    | 0xFFFFFFFF | Data Type:      | UInt32       |
| Default: | 0          | Change:         | Unchangeable |

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Cycle time

**1C32.04h Sync modes supported**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 1C32-04h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 0xFFFF   | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0s to 0xFFFF

**Description**

The synchronization modes that are supported.

**1C32.05h Minimum cycle time**

|          |            |                 |              |
|----------|------------|-----------------|--------------|
| Hex:     | 1C32-05h   | Effective mode: | -            |
| Min.:    | 0          | Unit:           | -            |
| Max.:    | 0xFFFFFFFF | Data Type:      | UInt32       |
| Default: | 0          | Change:         | Unchangeable |

**Value Range:**

0s to 0xFFFFFFFF

**Description**

The minimum cycle time.

**1C33.01h Sync mode**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 1C33-01h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 0xFFFF   | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0s to 0xFFFF

**Description**

Synchronization mode.

**1C33.02h Cycle time**

|          |            |                 |              |
|----------|------------|-----------------|--------------|
| Hex:     | 1C33-02h   | Effective mode: | -            |
| Min.:    | 0          | Unit:           | -            |
| Max.:    | 0xFFFFFFFF | Data Type:      | UInt32       |
| Default: | 0          | Change:         | Unchangeable |

**Value Range:**

0s to 0xFFFFFFFF

**Description**

Cycle time

**1C33.04h Sync modes supported**

|          |          |                 |              |
|----------|----------|-----------------|--------------|
| Hex:     | 1C33-04h | Effective mode: | -            |
| Min.:    | 0        | Unit:           | -            |
| Max.:    | 0xFFFF   | Data Type:      | UInt16       |
| Default: | 0        | Change:         | Unchangeable |

**Value Range:**

0s to 0xFFFF

**Description**

The synchronization modes that are supported.

**1C33.05h Minimum cycle time**

|          |            |                 |              |
|----------|------------|-----------------|--------------|
| Hex:     | 1C33-05h   | Effective mode: | -            |
| Min.:    | 0          | Unit:           | -            |
| Max.:    | 0xFFFFFFFF | Data Type:      | UInt32       |
| Default: | 0          | Change:         | Unchangeable |

**Value Range:**

0s to 0xFFFFFFFF

**Description**

The minimum cycle time.

**4.33 6000h Object Dictionary**

**603Fh Error code**

|          |       |                 |              |
|----------|-------|-----------------|--------------|
| Hex:     | 603Fh | Effective mode: | -            |
| Min.:    | 0     | Unit:           | -            |
| Max.:    | 65535 | Data Type:      | UInt16       |
| Default: | 0     | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

When an error described in the DSP402 profile occurs on the servo drive, 603Fh is as described in DSP402.

When an error specified by the user occurs on the servo drive, 603Fh is 0xFF00.

The value of 603Fh is in hexadecimal.

In addition, the object dictionary 203Fh displays auxiliary bytes of fault codes in hexadecimal.

203Fh is a UInt32 value, in which the high 16 bits indicate the internal fault code of the manufacturer, and the low 16 bits indicate the external fault code of the manufacturer.

**6040h****Control word**

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 6040h | Effective mode: | Real time |
| Min.:    | 0     | Unit:           | -         |
| Max.:    | 65535 | Data Type:      | UInt16    |
| Default: | 0     | Change:         | Real-time |

**Value Range:**

0–65535

**Description**

For details, see section Basic Functions of the function guide.

**6041h****Status word**

|          |       |                 |              |
|----------|-------|-----------------|--------------|
| Hex:     | 6041h | Effective mode: | -            |
| Min.:    | 0     | Unit:           | -            |
| Max.:    | 65535 | Data Type:      | UInt16       |
| Default: | 0     | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

For description of status words, see section Basic Functions of the function guide.

**605Ah****Quick stop mode**

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 605Ah | Effective mode: | At stop   |
| Min.:    | 0     | Unit:           | -         |
| Max.:    | 7     | Data Type:      | Int16     |
| Default: | 2     | Change:         | Real-time |

**Value Range:**

| Value | Stop Mode                                                                    |
|-------|------------------------------------------------------------------------------|
| 0     | Coast to stop, keeping de-energized status                                   |
| 1     | Ramp to stop as defined by 6084h/609Ah (HM), keeping the de-energized status |
| 2     | Ramp to stop as defined by 6085h, keeping the de-energized state             |
| 3     | Stop at the emergency stop torque, keeping de-energized state                |
| 5     | Ramp to stop as defined by 6084h/609Ah (HM), keeping position lock status    |
| 6     | Ramp to stop as defined by 6085h, keeping position lock status               |
| 7     | Stop at emergency-stop torque, keeping position lock status                  |

### Description

Defines the deceleration mode of the motor for stopping rotating upon quick stop and the motor status after stop.

Note: When the brake function is enabled and the value of 605Ah is lower than 4, the stop mode is forcibly set to "2: Ramp to stop as defined by 6085h, keeping de-energized state".

## 605Ch

### Stop mode at S-OFF

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 605Ch | Effective mode: | At stop   |
| Min.:    | -4    | Unit:           | -         |
| Max.:    | 2     | Data Type:      | Int16     |
| Default: | 0     | Change:         | Real-time |

### Value Range:

-4: Ramp to stop as defined by 6085h, keeping dynamic braking state

-3: at zero speed, keeping dynamic braking state

-2: Ramp to stop as defined by 6084h/609Ah (HM), keeping dynamic braking state

-1: Dynamic braking stop, keeping dynamic braking state

0: Coast to stop, keeping de-energized state

1: Ramp to stop as defined by 6084h/609Ah (HM), keeping de-energized state

2: Dynamic braking stop, keeping de-energized state

### Description

Defines the deceleration mode of the motor for stopping rotating upon S-ON OFF and the motor status after stop.

Note: If the brake is enabled, 605Ch is forced to -4: Ramp to stop as defined by 6085h, keeping dynamic braking state.

**605Dh****Halt mode**

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 605Dh | Effective mode: | At stop   |
| Min.:    | 1     | Unit:           | -         |
| Max.:    | 3     | Data Type:      | Int16     |
| Default: | 1     | Change:         | Real-time |

**Value Range:**

- 1: Ramp to stop as defined by 6084h/ 609Ah (HM), keeping position lock state
- 2: Ramp to stop as defined by 6085h, keeping position lock state
- 3: Stop at emergency stop torque, keeping position lock state

**Description**

Defines the deceleration mode of the motor for stopping rotating upon S-ON pause and the motor status after stop.

PP/PV/HM mode:

| Value | Stop Mode                                                                 |
|-------|---------------------------------------------------------------------------|
| 1     | Ramp to stop as defined by 6084h/609Ah (HM), keeping position lock status |
| 2     | Ramp to stop as defined by 6085h, keeping position lock status            |
| 3     | Stop at emergency-stop torque, keeping position lock status               |

PT mode:

| Value | Stop Mode                                                      |
|-------|----------------------------------------------------------------|
| 1/2/3 | Ramp to stop as defined by 6087h, keeping position lock status |

**605Eh****Stop mode at No. 2 fault**

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 605Eh | Effective mode: | At stop   |
| Min.:    | -5    | Unit:           | -         |
| Max.:    | 4     | Data Type:      | Int16     |
| Default: | 2     | Change:         | Real-time |

**Value Range:**

- 5: Stop at zero speed, keeping dynamic braking state
- 4: Stop at emergency stop torque, keeping dynamic braking state
- 3: Ramp to stop as defined by 6085h, keeping dynamic braking state
- 2: Ramp to stop as defined by 6084h/ 609Ah (HM), keeping dynamic braking state
- 1: Dynamic braking stop, keeping dynamic braking state
- 0: Coast to stop, keeping de-energized state
- 1: Ramp to stop as defined by 6084h/ 609Ah (HM), keeping de-energized state
- 2: Ramp to stop as defined by 6085h, keeping de-energized state
- 3: Stop at emergency stop torque, keeping de-energized state
- 4: Dynamic braking stop, keeping de-energized state



### Description

Defines the deceleration mode of the servo motor for stopping rotating and the servo motor status when a No. 2 fault occurs.

Note: If the brake is enabled, 605Eh is forced to -3: Ramp to stop as defined by 6085h, keeping dynamic braking state.

### 6060h

#### Servo drive mode

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 6060h | Effective mode: | Real time |
| Min.:    | 0     | Unit:           | -         |
| Max.:    | 10    | Data Type:      | UInt16    |
| Default: | 0     | Change:         | Real-time |

#### Value Range:

- 1: Profile position (PP) mode
- 3: Profile velocity (PV) mode
- 4: Profile torque (PT) mode
- 6: Homing (HM) mode
- 8: CSP mode
- 9: CSV mode
- 10: CST mode

#### Description

It defines the operation mode of the servo drive.

- 1: Profile position (PP) mode
- 3: Profile velocity (PV) mode
- 4: Profile torque (PT) mode
- 6: Homing (HM) mode
- 8: CSP mode
- 9: CSV mode
- 10: CST mode
- Other: N/A

If an unsupported operation mode is selected through an SDO, an SDO error will be returned.

If an unsupported operation mode is selected through a PDO, the change of the operation mode will be invalid.

### 6061h

#### Operation mode display

|          |       |                 |              |
|----------|-------|-----------------|--------------|
| Hex:     | 6061h | Effective mode: | -            |
| Min.:    | 0     | Unit:           | -            |
| Max.:    | 10    | Data Type:      | UInt16       |
| Default: | 0     | Change:         | Unchangeable |

#### Value Range:

- 1: Profile position (PP) mode
- 3: Profile velocity (PV) mode
- 4: Profile torque (PT) mode
- 6: Homing (HM) mode
- 8: CSP mode
- 9: CSV mode
- 10: CST mode

**Description**

Indicates the actual operation mode.

- 1: Profile position (PP) mode
- 3: Profile velocity (PV) mode
- 4: Profile torque (PT) mode
- 6: Homing (HM) mode
- 8: CSP mode
- 9: CSV mode
- 10: CST mode

**6062h****Position reference**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 6062h       | Effective mode: | -              |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | 0           | Change:         | Unchangeable   |

**Value Range:**

-2147483648 to 2147483647

**Description**

Indicates the real-time position reference (reference unit).

**6063h****Position actual value**

|          |             |                 |              |
|----------|-------------|-----------------|--------------|
| Hex:     | 6063h       | Effective mode: | -            |
| Min.:    | -2147483648 | Unit:           | Pulse        |
| Max.:    | 2147483647  | Data Type:      | Int32        |
| Default: | 0           | Change:         | Unchangeable |

**Value Range:**

-2147483648 to +2147483647

**Description**

Indicates the absolute position feedback (encoder unit) of the motor in real time.

**6064h****Position actual value**

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 6064h       | Effective mode: | -              |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | 0           | Change:         | Unchangeable   |

**Value Range:**

-2147483648 to 2147483647

**Description**

Indicates the absolute position feedback (reference unit) in real time.

Position actual value in user-defined unit (6064h) x Gear ratio (6091h) = Position actual value in encoder unit (6063h)

**6065h****Following error window**

|          |            |                 |                |
|----------|------------|-----------------|----------------|
| Hex:     | 6065h      | Effective mode: | Real time      |
| Min.:    | 0          | Unit:           | Reference unit |
| Max.:    | 4294967295 | Data Type:      | UInt32         |
| Default: | 219895614  | Change:         | Real-time      |

**Value Range:**

0 to 4294967295

**Description**

Defines the threshold of excessive position deviation (reference unit).

When the difference value between position demand value (6062h) and position actual value (6064h) keeps exceeding  $\pm 6065h$  after the time defined by 6066h elapses, B00.0 (Position deviation too large) occurs.

**6066h****Defines the time lapse to trigger excessive position deviation (EB00.0).**

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 6066h | Effective mode: | Real time |
| Min.:    | 0     | Unit:           | ms        |
| Max.:    | 65535 | Data Type:      | UInt16    |
| Default: | 0     | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Defines the time lapse to trigger excessive position deviation (EB00.0), which must be used together with 6065h.

**6067h****Position window**

|      |       |                 |           |
|------|-------|-----------------|-----------|
| Hex: | 6067h | Effective mode: | Real time |
|------|-------|-----------------|-----------|

|          |            |            |                |
|----------|------------|------------|----------------|
| Min.:    | 0          | Unit:      | Reference unit |
| Max.:    | 4294967295 | Data Type: | UInt32         |
| Default: | 46976      | Change:    | Real-time      |

**Value Range:**

0 to 4294967295

**Description**

Defines the threshold for position reach.

If the difference between 6062h and 6064h is within  $\pm 6067h$  and the time reaches 6068h, the position is reached. In this case, bit 10 of 6041h is set to 1 in the profile position mode.

This flag bit is valid only when the S-ON signal is valid in profile position control mode.

**6068h****Position window time**

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 6068h | Effective mode: | Real time |
| Min.:    | 0     | Unit:           | ms        |
| Max.:    | 65535 | Data Type:      | UInt16    |
| Default: | 0     | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Defines the window time for position reach, which must be used together with 6067h.

**606Ch****Actual speed**

|          |             |                 |                  |
|----------|-------------|-----------------|------------------|
| Hex:     | 606Ch       | Effective mode: | -                |
| Min.:    | -2147483648 | Unit:           | Reference unit/s |
| Max.:    | 2147483647  | Data Type:      | Int32            |
| Default: | 0           | Change:         | Unchangeable     |

**Value Range:**

-2147483648 to +2147483647

**Description**

It indicates the velocity actual value.

**606Dh****Velocity window**

|          |       |                 |              |
|----------|-------|-----------------|--------------|
| Hex:     | 606Dh | Effective mode: | Real time    |
| Min.:    | 0     | Unit:           | [mm/s]/[rpm] |
| Max.:    | 65535 | Data Type:      | UInt16       |
| Default: | 10    | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–65535[mm/s]/[rpm]

**Description**

Defines the threshold for speed reach.

If the difference value between the target speed 60FFh and the actual speed 606Ch is within  $\pm 606Dh$  and the time reaches 606Eh, the speed is reached and bit 10 of the status word 6041h is set to 1 in the profile velocity (PV) mode.

This flag bit is meaningful only when the servo drive is enabled in PV mode.

**606Eh      Velocity window time**

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 606Eh | Effective mode: | Real time |
| Min.:    | 0     | Unit:           | ms        |
| Max.:    | 65535 | Data Type:      | UInt16    |
| Default: | 0     | Change:         | Real-time |

**Value Range:**

0 ms to 65535 ms

**Description**

Defines the time window for speed reach, which must be used together with 606Dh.

**606Fh      Zero speed signal threshold**

|          |       |                 |              |
|----------|-------|-----------------|--------------|
| Hex:     | 606Fh | Effective mode: | Real time    |
| Min.:    | 0     | Unit:           | [mm/s]/[rpm] |
| Max.:    | 65535 | Data Type:      | UInt16       |
| Default: | 10    | Change:         | Real-time    |

**Value Range:**

0[mm/s]/[rpm]–65535[mm/s]/[rpm]

**Description**

Defines the threshold for determining whether the user velocity is 0.

When 606Ch is within  $\pm 606Fh$  and the time reaches the value set by 6070h, the user velocity is 0. When either condition is not met, the user velocity is not 0.

This flag bit is valid only in PV mode.

This flag bit is unrelated to the enable/disable state of the servo drive.

**6070h      Velocity threshold time**

|       |       |                 |           |
|-------|-------|-----------------|-----------|
| Hex:  | 6070h | Effective mode: | Real time |
| Min.: | 0     | Unit:           | ms        |
| Max.: | 65535 | Data Type:      | UInt16    |

Default: 0

Change: Real-time

**Value Range:**

0 ms to 65535 ms

**Description**

Defines the time window for determining whether the user velocity is 0, which must be used together with 606Fh.

**6071h****Target torque**

Hex: 6071h

Effective mode: Real time

Min.: -4000

Unit: 0.001

Max.: 4000

Data Type: Int16

Default: 0

Change: Real-time

**Value Range:**

-4000—4000

**Description**

Defines the target torque of the servo drive in the profile torque mode.  
The value 1000 corresponds to the rated torque of the motor.

**6072h****Max. torque reference**

Hex: 6072h

Effective mode: Real time

Min.: 0

Unit: 0.001

Max.: 4000

Data Type: UInt16

Default: 3500

Change: Real-time

**Value Range:**

0—4000

**Description**

Defines the maximum torque reference limit.  
The value 1000 corresponds to the rated torque of the motor.

**6074h****Torque reference**

Hex: 6074h

Effective mode: -

Min.: -4000

Unit: 0.001

Max.: 4000

Data Type: Int16

Default: 0

Change: Unchangeable

**Value Range:**

-4000—4000

**Description**

Defines the target torque value.

The value 1000 corresponds to the rated torque of the motor.

**6077h****Actual torque**

Hex: 6077h

Effective -

mode:

Min.: -4000

Unit: 0.001

Max.: 4000

Data Type: Int16

Default: 0

Change: Unchangeable

**Value Range:**

-4000—4000

**Description**

It displays the internal actual torque of the servo drive.

The value 1000 corresponds to the rated torque of the motor.

**607Ah****Target position**

Hex: 607Ah

Effective Real time

mode:

Min.: -2147483648

Unit: Reference unit

Max.: 2147483647

Data Type: Int32

Default: 0

Change: Real-time

**Value Range:**

-2147483648 to 2147483647

**Description**

Defines the target position of the servo drive in the profile position mode.

When bit 6 of 6040h is set to 0, 607Ah indicates the absolute target position of current segment.

After positioning of current segment is done, the value of 6064h will be the same as the value of 607Ah.

When bit 6 of 6040h is set to 1, 607Ah indicates the target increment displacement of current segment.

After positioning of current segment is done, user displacement increment will be the same as the value of 607Ah.

**607Ch****Home offset**

Hex: 607Ch

Effective At stop

mode:

Min.: -2147483648

Unit: Reference unit

Max.: 2147483647

Data Type: Int32

Default: 0

Change: Real-time

**Value Range:**

-2147483648 to 2147483647

### Description

Defines the physical location of mechanical zero that deviates from the home of the motor in position control modes (profile position mode, interpolation mode, and homing mode).

The home offset takes effect in the following conditions: The device is powered on, the homing operation is complete, and bit15 of 6041h is set to 1.

After homing is done, the position actual value (6064h) will be the same as the value of 607Ch.

If 607Ch is outside the value of 607Dh (Software position limit), E09.1 (Home setting error) will occur.

## 607D.01h Min. position limit

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 607D-01h    | Effective mode: | Real time      |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | -2147483648 | Change:         | Real-time      |

### Value Range:

-2147483648 to 2147483647

### Description

Defines the minimum software position limit relative to the mechanical zero point.

Minimum software position limit = (607D.01h)

The software position limit is used to judge the absolute position. When homing is not performed, the internal software position limit is invalid.

The condition for activating the software position limit is set in H0A.01 (object dictionary 0x200A.02h).

## 607D.02h Max. position limit

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 607D-02h    | Effective mode: | Real time      |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | 2147483647  | Change:         | Real-time      |

### Value Range:

-2147483648 to 2147483647

### Description

Defines the maximum software position limit relative to the mechanical zero.

Maximum software position limit = (607D.02h)



**607Eh****Reference polarity**

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 607Eh | Effective mode: | Real time |
| Min.:    | 0     | Unit:           | -         |
| Max.:    | 255   | Data Type:      | UInt16    |
| Default: | 0     | Change:         | Real-time |

**Value Range:**

0–255

**Description**

Defines the polarity of position or speed references.

When bit 7 is 1, it indicates the position reference is multiplied by "–1" and the motor direction is reversed in the standard position mode or interpolation mode.

When bit 6 is 1, it indicates the speed reference (60FFh) is multiplied by "–1" and the motor direction is reversed in the speed mode.

When bit 5 is 1, it indicates the torque demand value (6071h) is multiplied by "–1" and the motor direction is reversed in the torque mode.

Other bits are meaningless.

**607Fh****Max. speed**

|          |            |                 |                  |
|----------|------------|-----------------|------------------|
| Hex:     | 607Fh      | Effective mode: | Real time        |
| Min.:    | 0          | Unit:           | Reference unit/s |
| Max.:    | 4294967295 | Data Type:      | UInt32           |
| Default: | 4294967295 | Change:         | Real-time        |

**Value Range:**

0 to 4294967295

**Description**

Defines the maximum user running speed.

Set a proper gear ratio (8:1 recommended) when using a 26-bit encoder.

Otherwise, the motor speed will be limited to 3840 [mm/s]/[rpm].

**6081h****Profile velocity**

|          |            |                 |                  |
|----------|------------|-----------------|------------------|
| Hex:     | 6081h      | Effective mode: | Real time        |
| Min.:    | 0          | Unit:           | Reference unit/s |
| Max.:    | 4294967295 | Data Type:      | UInt32           |
| Default: | 111848106  | Change:         | Real-time        |

**Value Range:**

0 to 4294967295

**Description**

It sets the average velocity normally attained at the end of the acceleration ramp during a profiled motion.

The setpoint takes effect after the slave receives the displacement reference.

**6083h****Profile acceleration**

|          |            |                 |                               |
|----------|------------|-----------------|-------------------------------|
| Hex:     | 6083h      | Effective mode: | Real time                     |
| Min.:    | 0          | Unit:           | Reference unit/s <sup>2</sup> |
| Max.:    | 4294967295 | Data Type:      | UInt32                        |
| Default: | 4294967295 | Change:         | Real-time                     |

**Value Range:**

0 to 4294967295

**Description**

Defines the acceleration rate in the acceleration stage of the displacement reference in the profile position mode.

The following formula applies if a motor equipped with 23-bit encoder needs to run at 400 [mm/s]/[rpm] (6081h:  $400 \times 8388608/60$ ) with acceleration rate being 400 [mm/s]/[rpm]/s (6083h:  $400 \times 8388608/60$ ) and deceleration rate being 200 [mm/s]/[rpm]/s (6084h:  $200 \times 8388608/60$ ) under a gear ratio of 1:1:

Acceleration time  $t_{up} = \Delta 6081h / \Delta 6083h = 1$  (s); Deceleration time  $t_{down} = \Delta 6081h / \Delta 6084h = 2$  (s).

The setpoint 0 will be forcibly changed to 1.

**6084h****Profile deceleration**

|          |            |                 |                               |
|----------|------------|-----------------|-------------------------------|
| Hex:     | 6084h      | Effective mode: | Real time                     |
| Min.:    | 0          | Unit:           | Reference unit/s <sup>2</sup> |
| Max.:    | 4294967295 | Data Type:      | UInt32                        |
| Default: | 4294967295 | Change:         | Real-time                     |

**Value Range:**

0 to 4294967295

**Description**

Defines the deceleration rate in the deceleration stage of the displacement reference in the profile position mode.

The following formula applies if a motor equipped with 23-bit encoder needs to run at 400 [mm/s]/[rpm] (6081h:  $400 \times 8388608/60$ ) with acceleration rate being 400 [mm/s]/[rpm]/s (6083h:  $400 \times 8388608/60$ ) and deceleration rate being 200 [mm/s]/[rpm]/s (6084h:  $200 \times 8388608/60$ ) under a gear ratio of 1:1:

Acceleration time  $t_{up} = \Delta 6081h / \Delta 6083h = 1$  (s); Deceleration time  $t_{down} = \Delta 6081h / \Delta 6084h = 2$  (s).

The setpoint 0 will be forcibly changed to 1.

**6085h Quick stop deceleration**

|          |            |                 |                               |
|----------|------------|-----------------|-------------------------------|
| Hex:     | 6085h      | Effective mode: | Real time                     |
| Min.:    | 0          | Unit:           | Reference unit/s <sup>2</sup> |
| Max.:    | 4294967295 | Data Type:      | UInt32                        |
| Default: | 2147483647 | Change:         | Real-time                     |

**Value Range:**

0 to 4294967295

**Description**

Defines the deceleration rate when the quick stop command (6040h = 0x0002) is active and 605Ah (Quick stop option code) is set to 2 or 5.

The setpoint 0 will be forcibly changed to 1.

**6087h Torque slope**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 6087h      | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | 0.1%/s    |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 4294967295 | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

It sets the rate of change of torque in profile torque mode, in unit of torque increment per second.

In the profile torque mode, if 605Ah is set to 1, 2, 5, or 6, or 605Dh is set to 1 or 2, the servo drive decelerates to stop as defined by 6087h.

If the value exceeds the torque reference limit, the servo drive runs at the limit.

The setting value 0 will be forcibly changed into 1.

**6091.01h Motor resolution**

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 6091-01h   | Effective mode: | Real time |
| Min.:    | 1          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 1          | Change:         | At stop   |

**Value Range:**

1–4294967295

**Description**

Defines the numerator of the gear ratio.

Defines the proportional relation between the load shaft displacement designated by the user and the motor shaft displacement.

The relation between motor position feedback (encoder unit) and load shaft position feedback (reference unit) is as follows.

Motor position feedback = Load shaft position feedback x Gear ratio

The relation between the motor speed ([mm/s]/[rpm]) and the load shaft speed (reference unit/s) is as follows:

Motor speed ([mm/s]/[rpm]) = Load shaft speed \* 6091h \* 60/Encoder resolution

The motor acceleration ([mm/s]/[rpm]/ms) and the load shaft acceleration (reference unit/s<sup>2</sup>) is in the following relationship:

Motor acceleration ([mm/s]/[rpm]/ms) = Load shaft acceleration \* 6091h \* 1000 / Encoder resolution / 60

#### 6091.02h Shaft resolution

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 6091-02h   | Effective mode: | Real time |
| Min.:    | 1          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 1          | Change:         | At stop   |

##### Value Range:

1–4294967295

##### Description

Defines the denominator of the gear ratio.

#### 6098h Homing method

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 6098h | Effective mode: | Real time |
| Min.:    | -3    | Unit:           | -         |
| Max.:    | 35    | Data Type:      | Int8      |
| Default: | 1     | Change:         | Real-time |

##### Value Range:

-3–35

##### Description

Table 4–4 Description of homing method

| Value | Description                                                                                                                                                 |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -3    | Nearby, Z signal as home                                                                                                                                    |
| -2    | Forward, positive mechanical limit as deceleration point and Z signal as home                                                                               |
| -1    | Reverse, negative mechanical limit as deceleration point and Z signal as home                                                                               |
| 1     | Reverse, negative limit switch as deceleration point and Z signal as home, falling edge of the negative limit switch signal must be reached before Z signal |

| Value | Description                                                                                                                                                                                           |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2     | Forward, positive limit switch as deceleration point and Z signal as home, falling edge of positive limit switch signal must be reached before Z signal                                               |
| 3     | Forward, home switch as deceleration point and Z signal as home, falling edge on the same side of the home switch signal must be reached before Z signal                                              |
| 4     | Forward, home switch as deceleration point and Z signal as home, rising edge on the same side of the home switch signal must be reached before Z signal                                               |
| 5     | Reverse, home switch as deceleration point and Z signal as home, falling edge on the same side of the home switch signal must be reached before Z signal                                              |
| 6     | Reverse, home switch as deceleration point and Z signal as home, rising edge on the same side of the home switch signal must be reached before Z signal                                               |
| 7     | Forward, home switch as deceleration point and Z signal as home, falling edge on the same side of the home switch signal must be reached before Z signal                                              |
| 8     | Forward, home switch as deceleration point and Z signal as home, rising edge on the same side of the home switch signal must be reached before Z signal                                               |
| 9     | Forward, home switch as deceleration point and Z signal as home, rising edge on the other side of the home switch signal must be reached before Z signal                                              |
| 10    | Forward, home switch as deceleration point and Z signal as home, falling edge on the other side of the home switch signal must be reached before Z signal                                             |
| 11    | Reverse, home switch as deceleration point and Z signal as home, falling edge on the same side of the home switch signal must be reached before Z signal                                              |
| 12    | Reverse, home switch as deceleration point and Z signal as home, rising edge on the same side of the home switch signal must be reached before Z signal                                               |
| 13    | Reverse, home switch as deceleration point and Z signal on the other side of the home switch signal as home, rising edge on the other side of the home switch signal must be reached before Z signal  |
| 14    | Reverse, home switch as deceleration point and Z signal on the other side of the home switch signal as home, falling edge on the other side of the home switch signal must be reached before Z signal |
| 15–16 | Undefined. The servo drive does not perform the homing operation.                                                                                                                                     |
| 17–30 | Similar to setpoints 1...14 except that the deceleration point coincide with the home                                                                                                                 |
| 31–32 | Undefined. The servo drive does not perform the homing operation.                                                                                                                                     |
| 33    | Reverse, Z signal as home                                                                                                                                                                             |
| 34    | Forward, Z signal as home                                                                                                                                                                             |
| 35    | Current position as home                                                                                                                                                                              |

**6099.01h Speed during search for switch**

|       |            |                 |                  |
|-------|------------|-----------------|------------------|
| Hex:  | 6099-01h   | Effective mode: | Real time        |
| Min.: | 0          | Unit:           | Reference unit/s |
| Max.: | 4294967295 | Data Type:      | UInt32           |

Default: 111848106

Change: At stop

**Value Range:**

0 to 4294967295

**Description**

Defines the speed during search for the deceleration point signal. A large setpoint helps prevent E601.0 (Homing timeout).

**6099.02h Speed during search for zero**

Hex: 6099-02h

Effective mode: Real time

Min.: 0

Unit: Reference unit/s

Max.: 4294967295

Data Type: UInt32

Default: 11184810

Change: At stop

**Value Range:**

0 to 4294967295

**Description**

Defines the speed in searching for the home signal. Setting this speed to a low value prevents overshoot during stop at high speed, avoiding excessive deviation between the stop position and the set mechanical home.

**609Ah Homing acceleration**

Hex: 609Ah

Effective mode: Real time

Min.: 0

Unit: Reference unit/s<sup>2</sup>

Max.: 4294967295

Data Type: UInt32

Default: 4294967295

Change: Real-time

**Value Range:**

0 to 4294967295

**Description**

It sets the acceleration during the homing operation.

**60B0h Position offset**

Hex: 60B0h

Effective mode: Real time

Min.: -2147483648

Unit: Reference unit

Max.: 2147483647

Data Type: Int32

Default: 0

Change: Real-time

**Value Range:**

-2147483648 to 2147483647

**Description**

Sets the position offset.

|              |                            |             |                              |
|--------------|----------------------------|-------------|------------------------------|
| <b>60B1h</b> | <b>Velocity offset</b>     |             |                              |
|              | Hex:                       | 60B1h       | Effective    Real time       |
|              |                            |             | mode:                        |
|              | Min.:                      | -2147483648 | Unit:       Reference unit/s |
|              | Max.:                      | 2147483647  | Data Type: Int32             |
|              | Default:                   | 0           | Change:    Real-time         |
|              | <b>Value Range:</b>        |             |                              |
|              | -2147483648 to +2147483647 |             |                              |
|              | <b>Description</b>         |             |                              |
|              | Set the velocity offset.   |             |                              |

|              |                          |       |                        |
|--------------|--------------------------|-------|------------------------|
| <b>60B2h</b> | <b>Torque offset</b>     |       |                        |
|              | Hex:                     | 60B2h | Effective    Real time |
|              |                          |       | mode:                  |
|              | Min.:                    | -4000 | Unit:       0.001      |
|              | Max.:                    | 4000  | Data Type: Int16       |
|              | Default:                 | 0     | Change:    Real-time   |
|              | <b>Value Range:</b>      |       |                        |
|              | -4000—4000               |       |                        |
|              | <b>Description</b>       |       |                        |
|              | Set the velocity offset. |       |                        |

|              |                                                                |       |                        |
|--------------|----------------------------------------------------------------|-------|------------------------|
| <b>60B8h</b> | <b>Touch probe function</b>                                    |       |                        |
|              | Hex:                                                           | 60B8h | Effective    Real time |
|              |                                                                |       | mode:                  |
|              | Min.:                                                          | 0     | Unit:       -          |
|              | Max.:                                                          | 65535 | Data Type: UInt16      |
|              | Default:                                                       | 0     | Change:    Real-time   |
|              | <b>Value Range:</b>                                            |       |                        |
|              | 0—65535                                                        |       |                        |
|              | <b>Description</b>                                             |       |                        |
|              | See the following table for descriptions of each bit of 60B8h. |       |                        |

| bit   | Name                                                                                                                                  | Description                                                                                                                                                                                                                                                                     |
|-------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0     | Touch probe 1 function selection<br>0: Probe 1 disabled<br>1: Probe 1 enabled                                                         | Bit0 to bit5: settings related to probe 1<br>When a DI is used to trigger the touch probe function, the DI source cannot be changed once the touch probe function is enabled.<br>For absolute encoders, Z signal refers to the zero point of the single-turn position feedback. |
| 1     | Touch probe 1 trigger mode<br>0: Single trigger mode (Latches the position at the first trigger event.)<br>1: Continuous trigger mode |                                                                                                                                                                                                                                                                                 |
| 2     | Touch probe 1 trigger signal selection<br>0: DI signal<br>1: Z signal                                                                 |                                                                                                                                                                                                                                                                                 |
| 3     | N/A                                                                                                                                   |                                                                                                                                                                                                                                                                                 |
| 4     | Touch probe 1 positive edge<br>0: Latching at positive edge disabled<br>1: Latching at positive edge enabled                          |                                                                                                                                                                                                                                                                                 |
| 5     | Touch probe 1 negative edge<br>0: Latching at negative edge disabled<br>1: Latching at negative edge enabled                          |                                                                                                                                                                                                                                                                                 |
| 6–7   | N/A                                                                                                                                   | -                                                                                                                                                                                                                                                                               |
| 8     | Touch probe 2 function selection<br>0: Probe 2 disabled<br>1: Probe 2 enabled                                                         | Bit8 to bit13: settings related to probe 2                                                                                                                                                                                                                                      |
| 9     | Touch probe 2 trigger mode<br>0: Single trigger mode (Latches the position at the first trigger event.)<br>1: Continuous trigger mode |                                                                                                                                                                                                                                                                                 |
| 10    | Touch probe 2 trigger signal selection<br>0: DI signal<br>1: Z signal                                                                 |                                                                                                                                                                                                                                                                                 |
| 11    | N/A                                                                                                                                   |                                                                                                                                                                                                                                                                                 |
| 12    | Touch probe 2 positive edge<br>0: Latching at positive edge disabled<br>1: Latching at positive edge enabled                          |                                                                                                                                                                                                                                                                                 |
| 13    | Touch probe 2 negative edge<br>0: Latching at negative edge disabled<br>1: Latching at negative edge enabled                          |                                                                                                                                                                                                                                                                                 |
| 14–15 | N/A                                                                                                                                   | -                                                                                                                                                                                                                                                                               |

**60B9h****Touch probe status**

Hex: 60B9h

Effective mode: -

Min.: 0

Unit: -

Max.: 65535

Data Type: UInt16

Default: 0

Change: Unchangeable



**Value Range:**

0–65535

**Description**

Defines the functions of touch probe 1 and touch probe 2.

See the following table for descriptions of each bit of 60B9h.

| bit   | Name                                                                                                              | Description                                                                                                             |
|-------|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| 0     | Touch probe 1 function selection<br>0: Probe 1 disabled<br>1: Probe 1 enabled                                     | Bit0 to bit2: Status of probe 1                                                                                         |
| 1     | Touch probe 1 positive edge value<br>0: No positive edge value latched<br>1: Edge value latched                   |                                                                                                                         |
| 2     | Touch probe 1 negative edge value<br>0: No negative edge value latched<br>1: Negative edge value latched          |                                                                                                                         |
| 3–5   | N/A                                                                                                               | -                                                                                                                       |
| 6–7   | When the function of probe 1 is selected as continuous sampling, the total number of times the probe is triggered | When the function of probe 1 is selected as continuous sampling, the total number of times (0–3) the probe is triggered |
| 8     | Probe 2 enable:<br>0: Probe 2 disabled<br>1: Probe 2 enabled                                                      | Bit8 to bit10: Status of probe 2                                                                                        |
| 9     | Touch probe 2 positive edge value<br>0: No positive edge value latched<br>1: Edge value latched                   |                                                                                                                         |
| 10    | Touch probe 2 negative edge value<br>0: No negative edge value latched<br>1: Negative edge value latched          |                                                                                                                         |
| 11–13 | N/A                                                                                                               | -                                                                                                                       |
| 14–15 | When the function of probe 2 is selected as continuous sampling, the total number of times the probe is triggered | When the function of probe 2 is selected as continuous sampling, the total number of times (0–3) the probe is triggered |

**60BAh****Touch probe 1 positive edge position value**

Hex: 60BAh

Effective -

mode:

Min.: -2147483648

Unit: Reference unit

Max.: 2147483647

Data Type: Int32

Default: 0

Change: Unchangeable

**Value Range:**

-2147483648 to 2147483647

#### Description

Indicates the position feedback value (reference unit) latched at positive edge of touch probe 1 signal.

### 60BBh

#### Touch probe 1 negative edge position value

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 60BBh       | Effective mode: | -              |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | 0           | Change:         | Unchangeable   |

#### Value Range:

-2147483648 to 2147483647

#### Description

Indicates the position feedback value (reference unit) latched at negative edge of touch probe 1 signal.

### 60BCh

#### Touch probe 2 positive edge position value

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 60BCh       | Effective mode: | -              |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | 0           | Change:         | Unchangeable   |

#### Value Range:

-2147483648 to 2147483647

#### Description

Indicates the position feedback value (reference unit) latched at positive edge of touch probe 2 signal.

### 60BDh

#### Touch probe 2 negative edge position value

|          |             |                 |                |
|----------|-------------|-----------------|----------------|
| Hex:     | 60BDh       | Effective mode: | -              |
| Min.:    | -2147483648 | Unit:           | Reference unit |
| Max.:    | 2147483647  | Data Type:      | Int32          |
| Default: | 0           | Change:         | Unchangeable   |

#### Value Range:

-2147483648 to 2147483647

#### Description

Indicates the position feedback value (reference unit) latched at negative edge of touch probe 2 signal.

**60C5h****Max. acceleration**

|          |            |                 |                               |
|----------|------------|-----------------|-------------------------------|
| Hex:     | 60C5h      | Effective mode: | Real time                     |
| Min.:    | 0          | Unit:           | Reference unit/s <sup>2</sup> |
| Max.:    | 4294967295 | Data Type:      | UInt32                        |
| Default: | 4294967295 | Change:         | Real-time                     |

**Value Range:**

0 to 4294967295

**Description**

Defines the maximum permissible acceleration rate of the acceleration segment in the profile position mode, profile velocity mode, and homing mode.

The setpoint 0 will be forcibly changed to 1.

**60C6h****Max. deceleration**

|          |            |                 |                               |
|----------|------------|-----------------|-------------------------------|
| Hex:     | 60C6h      | Effective mode: | Real time                     |
| Min.:    | 0          | Unit:           | Reference unit/s <sup>2</sup> |
| Max.:    | 4294967295 | Data Type:      | UInt32                        |
| Default: | 4294967295 | Change:         | Real-time                     |

**Value Range:**

0 to 4294967295

**Description**

Defines the maximum permissible deceleration in the profile position mode, profile velocity mode, and homing mode.

The setpoint 0 will be forcibly changed to 1.

**60D5h****Touch probe 1 positive edge counter**

|          |       |                 |              |
|----------|-------|-----------------|--------------|
| Hex:     | 60D5h | Effective mode: | -            |
| Min.:    | 0     | Unit:           | -            |
| Max.:    | 65535 | Data Type:      | UInt16       |
| Default: | 0     | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

The counting value is added by "1" each time this object is triggered.

**60D6h****Touch probe 1 negative edge counter**

|       |       |                 |   |
|-------|-------|-----------------|---|
| Hex:  | 60D6h | Effective mode: | - |
| Min.: | 0     | Unit:           | - |

|          |       |            |              |
|----------|-------|------------|--------------|
| Max.:    | 65535 | Data Type: | UInt16       |
| Default: | 0     | Change:    | Unchangeable |

**Value Range:**

0–65535

**Description**

The counting value is added by "1" each time this object is triggered.

**60D7h Touch probe 2 positive edge counter**

|          |       |                 |              |
|----------|-------|-----------------|--------------|
| Hex:     | 60D7h | Effective mode: | -            |
| Min.:    | 0     | Unit:           | -            |
| Max.:    | 65535 | Data Type:      | UInt16       |
| Default: | 0     | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

The counting value is added by "2" each time this object is triggered.

**60D8h Touch probe 2 negative edge counter**

|          |       |                 |              |
|----------|-------|-----------------|--------------|
| Hex:     | 60D8h | Effective mode: | -            |
| Min.:    | 0     | Unit:           | -            |
| Max.:    | 65535 | Data Type:      | UInt16       |
| Default: | 0     | Change:         | Unchangeable |

**Value Range:**

0–65535

**Description**

The counting value is added by "2" each time this object is triggered.

**60E0h Positive torque limit**

|          |       |                 |           |
|----------|-------|-----------------|-----------|
| Hex:     | 60E0h | Effective mode: | Real time |
| Min.:    | 0     | Unit:           | 0.001     |
| Max.:    | 4000  | Data Type:      | UInt16    |
| Default: | 3000  | Change:         | Real-time |

**Value Range:**

0–4000

**Description**

It sets the maximum positive torque in the motor.

**60E1h****Negative torque limit**

|          |       |            |           |
|----------|-------|------------|-----------|
| Hex:     | 60E1h | Effective  | Real time |
|          |       | mode:      |           |
| Min.:    | 0     | Unit:      | 0.001     |
| Max.:    | 4000  | Data Type: | UInt16    |
| Default: | 3000  | Change:    | Real-time |

**Value Range:**

0–4000

**Description**

It sets the maximum negative torque in the motor.

**60F4h****Position deviation**

|          |             |            |                |
|----------|-------------|------------|----------------|
| Hex:     | 60F4h       | Effective  | -              |
|          |             | mode:      |                |
| Min.:    | -2147483648 | Unit:      | Reference unit |
| Max.:    | 2147483647  | Data Type: | Int32          |
| Default: | 0           | Change:    | Unchangeable   |

**Value Range:**

-2147483648 to 2147483647

**Description**

Indicates the position deviation (reference unit).

**60FCh****Position reference**

|          |             |            |              |
|----------|-------------|------------|--------------|
| Hex:     | 60FCh       | Effective  | -            |
|          |             | mode:      |              |
| Min.:    | -2147483648 | Unit:      | -            |
| Max.:    | 2147483647  | Data Type: | Int32        |
| Default: | 0           | Change:    | Unchangeable |

**Value Range:**

-2147483648–2147483647

**Description**

Indicates the position reference (encoder unit).

If no warning is detected when the S-ON signal is active, the relation between the position reference in reference unit and that in encoder unit is as follows:

$60FCh \text{ (in encoder unit)} = 6062h \text{ (in reference unit)} \times 6091h$

**60FDh****DI state**

|          |            |            |              |
|----------|------------|------------|--------------|
| Hex:     | 60FDh      | Effective  | -            |
|          |            | mode:      |              |
| Min.:    | 0          | Unit:      | -            |
| Max.:    | 4294967295 | Data Type: | UInt32       |
| Default: | 0          | Change:    | Unchangeable |

**Value Range:**

0–4294967295

**Description**

Indicates current DI logic of the drive.

0: Inactive

1: Active

The signal indicated by each bit is described as follows:

Bit signal

Table 4–5 The DI signal indicated by each bit

| bit   | Description               |
|-------|---------------------------|
| 0     | Reverse overtravel active |
| 1     | Forward overtravel active |
| 2     | Home signal active        |
| 3–15  | N/A                       |
| 16    | DI1 input active          |
| 17    | DI2 input active          |
| 18    | DI3 input active          |
| 19    | DI4 input active          |
| 20    | DI5 input active          |
| 21–26 | N/A                       |
| 27    | STO1 signal input         |
| 28    | STO2 signal input         |
| 29    | EDM output active         |
| 30    | Z signal active           |
| 31    | N/A                       |

**60FFh****PV, CSV mode speed reference**

Hex: 60FFh

Effective Real time

mode:

Min.: -2147483648

Unit: Reference unit/s

Max.: 2147483647

Data Type: Int32

Default: 0

Change: Real-time

**Value Range:**

–2147483648 to +2147483647

**Description**

Defines the target speed in the cyclic synchronous velocity mode/profile velocity mode.

### 60FE.01h Physical output

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 60FE-01h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

Indicates the DO logic.

The signal indicated by each bit is described as follows:

| bit   | Description                                                                           |
|-------|---------------------------------------------------------------------------------------|
| 0–15  | N/A                                                                                   |
| 16    | Forced DO1 output (0: off, 1: on); when bit 16 of 60FE.02 is set to 1                 |
| 17    | Forced DO2 output (0: off, 1: on); when bit 17 of 60FE.02 is set to 1                 |
| 18–25 | N/A                                                                                   |
| 26    | Switched between P and PI for gain switchover only when bit 26 of 60FE.02 is set to 1 |
| 27–31 | N/A                                                                                   |

### 60FE.02h Bitmask

|          |            |                 |           |
|----------|------------|-----------------|-----------|
| Hex:     | 60FE-02h   | Effective mode: | Real time |
| Min.:    | 0          | Unit:           | -         |
| Max.:    | 4294967295 | Data Type:      | UInt32    |
| Default: | 0          | Change:         | Real-time |

**Value Range:**

0–4294967295

**Description**

0 to 15: N/A

16: Forced DO1 output enable

17: Forced DO2 output enable

18 to 25: N/A

26: P/PI switchover enable

27 to 31: N/A



PS00015555A01

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